LEADING PROFESSIONAL INQUIRY TO DEVELOP STUDENTS' RESEARCH SKILLS

by

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Abstract

This study describes my leadership of a professional inquiry, with two secondary teachers, to implement a new strategy for teaching student research skills. Our Teacher Learning Team used Mill's (2004) action research process to implement Brown, Klein, and Lapadat's (2009) student research platform with cycles of action, observation, and collaborative reflection to support further action. Secondary students were introduced to the process of gathering information in a carefully controlled way, so that their progress could be monitored and instruction could be differentiated to help them gain independence. I report the challenges and successes that led to teacher and leadership learning. My analysis revealed that persistent use of this strategy enabled these teachers to shift from a product to process orientation that led to enhanced engagement in learning for students. With carefully sequenced skill instruction, problems with plagiarism were no longer evident and students gained a sense of discovery that increased their interest in course content.

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Glossary

I am providing a definition for the terms that have specific meaning in this study.

classroom action research

In this study, classroom action research is used interchangeably with *professional inquiry*. Both focus on a cycle of action, observation, and reflection as a means to job-embedded learning. Classroom action research appears limited to teachers and not to include administrators of schools or districts, which is applicable to this study but not to others where the focus may be school or district wide. The idea of *research* implies methods other than those currently in the repertoire of educators (Brown & Cherkowski, 2011). Thus, there is a transition in this study from describing the collaborative process as *classroom action research* to more frequent description of our work as *professional inquiry* using the authentic tools of the teaching profession, including classroom and school-based inquiry.

differentiated instruction

Differentiated instruction occurs when teachers create " multiple paths so that students of different abilities, interest or learning needs experience equally appropriate ways to absorb, use, develop and present concepts as a part of the daily learning process" (Theroux, 2011).

formative assessment

Formative assessment is the ongoing "gathering of information about learning as learning is taking place" (Anderson & Krathwohl, 2001, p.101). The purpose of formative assessment is to be able to make "instructional modifications to improve the quality or amount of learning" (Anderson and Krathwohl, 2001, p.

102). Formative assessment is usually used to "improve student learning; summative assessment is used primarily to assign grades" (Anderson & Krathwohl, 2001, p. 102). Teaching strategies that contribute to formative assessment include sharing clear learning intentions and criteria for success with students and providing descriptive feedback that draws students' attention to criteria. The overall intent of formative assessment is to help students learn to take more responsibility for and be more engaged in their own learning.

gradual release of responsibility

This phrase refers to a teaching sequence that begins with teacher demonstration, moves to guided practice, then independent practice, and finally to independent student application (Routman, 2003).

high capacity schools

These are schools "where good teachers are finding exciting and ingenious methods for making a difference in the lives of the students in their classroom and the colleagues in their schools" (Mitchell & Sackney, 2009, p. 19). Teachers in high-capacity schools "experiment with new professional ideas and strategies, as a way of life" (Mitchell & Sackney 2009, p. 19).

learning community

"A learning community consists of a group of people who take an active, reflective, collaborative, learning-oriented and growth promoting approach towards the mysteries, problems and perplexities of teaching and learning" (Mitchell and Sackney, 2000, p. 9)

multimodal literacy

Brown, Klein and Lapadat (2008) have quoted Jewitt and Kress (2003) to define multimodal literacy as "the ability to communicate and make meaning through a variety of modes including image, gaze, movement, music, speech and sound effect"(p.1). In their view, multimodal literacy consists of proficiency with a variety of receptive and expressive texts. This proficiency is supported by infusing computer technology and fine arts across the curriculum.

note taking and note making

When gathering information using the student research platform chart, students take notes from several sources in response to focus questions. In the note-making section of the chart, students express their subjective thoughts about the information, in order to develop their own voice when they move from the receptive to expressive stage of the inquiry exercise.

professional conversation

Professional conversations are an important part of learning communities, because through these conversations expertise is shared with others. Dufour explained that "the powerful collaboration that characterizes professional learning communities is a systematic process in which teacher work together to analyze and improve their classroom practice" (Dufour, 2004, p.4).

professional inquiry

In this study, the terms *professional inquiry* and *classroom action research* are similar. The method I chose for the study was referred to as classroom action research by Mills (2003) but our approach was informed by teacher inquiry as

described by Kaser and Halbert (2009) and Brown and Cherkowski (2011). *Professional inquiry* has greater emphasis on the potential for educators, including teachers and administrators, to take charge of their ongoing learning through investigating authentic problems in their own practice (Brown & Cherkowski, 2011). The term is gaining acceptance with the advent of inquiry-based, 21st century learning (Hannon & McKay, 2011; Hattie, 2009) because it emphasizes the parallels or symmetry between creating a culture of curiosity, experimentation, and engagement among teachers and also among their students.

professional learning community (PLC)

Schools that function as professional learning communities are characterized by a collaborative culture. Teacher isolation is replaced with collaborative processes that are deeply embedded into the daily life of the school. Members of a professional learning community are "called upon to be contributing members of a collaborative effort to improve the schools capacity to help all students learn at high levels" (Eaker, Dufour, and Dufour, 2002, p.5).

student research platform

Research platforms are "explicit instruction with potential to scaffold students toward multimodal literacy and purposeful independent inquiry" (Brown, Klein, & Lapadat, 2008, p. 1) When designing and teaching a research platform "teachers create multimodal text sets on topics of interest and guide students to collect information, make sense of it, and present it to peers in engaging formats" (Brown, Klein, & Lapadat, 2008, p.1). Although the original term for this teaching and learning strategy was *student research platform*, the authors who

designed it are now referring to it as *student inquiry platform*, in response to current initiatives in 21st century learning.

teacher learning team

In this study, teacher learning team refers to the teacher participants who are using a collaborative inquiry process to implement and adapt a new instructional strategy, the *student inquiry platform*.

voice

"Voice is the sum of all strategies used by the author to create the illusion that the writer is speaking directly to the reader from the page" (Clark, 2006, p.6). The BC provincial Language Arts curriculum provides a definition of voice as

an aspect of writing style that refers to the individuality of the writer as perceived by the reader. The student who writes with an individual voice offers an honest and unique style that the reader finds compelling and engaging. It is one of the seven writing traits described in the [BC] Prescribed Learning Outcomes and Achievement Indicators sections of the curriculum. The other writing traits are *Ideas*, *Organization*, *Word Choice*, *Sentence Fluency*, *Conventions*,and *Presentation.* (BC English Language Arts Integrated Resource Package, 2001,Grade 10, p. 143)

21st (twenty-first) century learning

This is a recent educational reform movement that aims to prepare young people for the demands of the future workplace. Young people will need to be prepared to know "lifelong approaches to learning how to learn" and strategies for teaching themselves to learn (Abbott,1997, p.1). Advocates predict a shift from teacher

centered learning to student driven learning, with a focus on coaching students on how to learn. Building student capacity for research skills, collaborative team work, leadership skills, problem solving and technology skills, are all goals for implementing a 21st century learning model (Hannon & McKay, 2009, p. 8).

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My thesis has been both a challenging and rewarding experience. There have been many personal hurdles such as balancing my time between my family, career, friends and my equestrian passion. During this master's journey our son, Kennedy was born and is now almost three, and our first child, Danya, grew from a baby to a kindergartener. As you can imagine, this journey required significant help and support. I am very thankful to the many people in my life who encouraged me and inspired me in countless ways.

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Danya and Kennedy, *my children.* This journey has been a challenge for all of us, especially considering that for years both Mom and Dad were busy with our Masters work. One thing I know for sure is that I have become a better Mom, teacher and person in the process and that I am looking forward to more time with you.

Dedication

I dedicate this piece of work to my two children, Danya and Kennedy. Both of your love, sweetness, and joy remind me every day what is truly important in life. I also dedicate this thesis to my husband Steve and my entire family, who have always been there for me, and have never doubted my dreams, no matter how ambitious they might be.

I. THE CATALYST FOR INQUIRY

In our modern age, never has so much information been so readily available, to all people, including students. With enormous volumes of information available at students' fingertips, educators are increasingly concerned with helping students make sense of what they read. Because the internet has little quality control, there is an increased need for educators to teach students to "recognize bias, find appropriate sources and cross-check information" (David, 2009, p.84).

I have been teaching secondary school for nine years and I have become increasingly frustrated with teaching students how to narrow a topic, search for their information, and paraphrase and cite their sources. It seems that as technology has become more available for students, their tendency is to rely exclusively on the internet as their only source of information. According to my grade ten English class last semester, the students admitted they did understand the serious nature of plagiarism; however, they did not perceive cutting and pasting other peoples' work together to make a "new" paper, to be wrong in any way! Some students do not have any idea how to cite their sources and resort to "forgetting" where they found any of the information. In fact, much to the astonishment of many of us who grew up searching in libraries, some students profess that they have rarely looked in books to acquire information.

Learning basic research skills begins, ideally, in the early elementary years as part of the BC Ministry of Education prescribed curriculum (BC Ministry of Education, 2011). However, in my experience, many junior secondary students are bewildered as to how to begin to do a research project. I am not suggesting that elementary teachers are not doing their job. Instead I am arguing that with the rapid expansion of access to

information on the internet, it is a more daunting job to teach critical thinking and appropriate research skills. Further, the technology available to students today, in tandem with calls for constructivist pedagogy (Richardson, 2003), inquiry-based learning (Brown & Cherkowski, 2011), and instruction for 21st century learning (Alberta Learning, 2004), indicates that a greater range of ways for students to express their learning is needed. However, I contend that many students' inability to access texts purposefully and evaluate and synthesize information results in a lack of voice in their presentations and writing. There is little meaningful personal commentary or application that shows they are making sense of information.

Lindblom (2008), a teacher leader and researcher, described this problem when she commented that "many students are able to write lively, logical personal stories, but their expository writing is dull" (2008, p.5). Students need to learn to select relevant information, paraphrase it, and synthesize it until it has meaning for them and can be expressed in their own creative voice. This need was the driving force behind the new approach to teaching research skills, the student research platform, developed by Brown, Klein, and Lapadat (2008). It is also the catalyst for this study, in which I have led two other secondary teachers in collaborative inquiry about how to implement the student research platform strategy in their classrooms. However, the needs of teacher participants and their students required that the study actually focus on information gathering strategies and preparation for synthesis in writing or presentations with voice or creative expression. It turned out that the focus on finding sources of information in response to focus questions, and reading, paraphrasing, taking notes about, and commenting on the information (*note making*) consumed the time allotted for the study and was pertinent to

the interests of the participating teachers. This study did not address the expressive, multimodal aspect of the student research platform (Brown, Klein, & Lapadat, 2009) but paved the way for future inquiry with that focus, once students have mastered information gathering as a learning strategy.

A Problem Emerging from Practice

Teaching research skills is an area that I have targeted for my professional growth and for development as a teacher leader because nonfiction writing is certainly a weakness that I have noticed in many of my students. Lindblom (2008) expressed similar frustration when she described her experience judging students at a speech competition: "perplexed, we agonize how best to evaluate beautifully enunciated speeches that have been copied verbatim from references" (p.3.) I believe that developing strong and independent research skills would be a great benefit to students for their other classes and for their lifelong learning. Every year I have asked students to attempt at least one research paper in each of my classes. However, I have remained unconvinced that students understand the process or have learned to use it independently, despite the attempts I have made to alter the ways I teach these skills.

Lack of student ability to synthesize research information and lack of practical strategies to teach them to do so may be among the reasons that teachers are reluctant to allow students to use the internet to write research papers. Lee (2008) documented other possible reasons that deal specifically with students' information gathering skills in terms of technology: a) students tend to plagiarize by cutting and pasting information from websites, b) students have problems distinguishing an appropriate site from an

inappropriate one, such as an advertisement and c) students will not search beyond the first few Google sites (p.1). However, rejecting online information is a short-sighted solution that does not prepare students for lifelong learning in a digital world. A more productive and forward-thinking response is to continue the search for manageable instructional strategies that effectively scaffold student mastery and build independence research or inquiry skills.

A Potential Solution: Student Research or Inquiry Platforms

Today's students need to learn to select relevant information purposefully from a variety of text-based and online sources, paraphrase it, comment on it, and synthesize both facts and commentary in engaging writing and presentations. Making sense of information in your own words and making connections to familiar information and experience is the essence of constructivist learning and provides a foundation for writing with *voice,* which refers to the individuality of the writer. As one of the seven writing traits described in BC curriculum documents, "the student who writes with an individual voice offers an honest and unique style that the reader finds compelling and engaging" (BC Language Arts Integrated Resource Package, Gr. 10, p. 143). However, many teachers, including myself, have not been familiar with instructional strategies that support that kind of learning. We may address the prescribed curricular outcomes related to research skills in an assignment or two but we have lacked the means to build student ownership of learning with mastery for independent inquiry.

With the advent of inquiry-based learning (Hannon & McKay, 2011; Hattie, 2009; Alberta Learning, 2004) and 21st century learning (BCTLA, 2011), there is an increased focus on information literacy. Resources for teaching research skills now exist;

Specifically, Brown, Klein, and Lapadat (2009) have proposed an updated version of Klein's (1990) *controlled research* strategy, which they refer to as a *student research or inquiry platform*. The designers of this comprehensive instructional strategy have proposed that students be introduced to research in a carefully controlled way, so that their progress can be monitored and instruction differentiated to their needs. With repeated cycles of inquiry and descriptive feedback, students become independently skilful at generating focus questions, paraphrasing and recording information from a variety of sources, and synthesizing the information with their own comments in a creative presentation of their learning.

To summarize, research or inquiry platforms are "explicit instruction with potential to scaffold students toward multimodal literacy and purposeful independent inquiry presented with a confident voice" (Brown, Klein, Lapadat, 2008, p. 1). When designing and teaching a research platform "teachers create multimodal text sets on topics of interest and guide students to collect information, make sense of it, and present it to peers in engaging formats" (Brown, Klein, Lapadat, 2008, p.1). However, the student research platform strategy has not been widely implemented and Brown, Klein, and Lapadat (2009) have called for teachers to participate in its design with their own reflective implementation.

I saw potential for this strategy to build my own instructional skills and to support early-career teachers as they struggled with student responses to research assignments similar to the ones I have encountered. Therefore, this study responds to the call for further, classroom-based research. I introduced the strategy to two colleagues in their early years of secondary teaching and facilitated collaborative, action-based professional

inquiry (Mills, 2003; Brown & Cherkowski, 2011) to reflect on the benefits and problems of implementation. Subsequently, I applied the student research platform in my own classroom and added insights from that experience.

Research Questions

My overall research question is: *How does collaborative inquiry led by a teacher leader support implementation of the student research platform strategy and help teachers make sustainable changes to their literacy practice?* Three more specific questions were drafted to guide my data collection and analysis:

1. *How is the research platform effective for building students' skills? What changes or modifications or scaffolding steps do the participating teachers suggest?*
2. *How is the collaborative inquiry approach effective for helping teachers implement and adapt the strategy?*
3. *What does this inquiry teach about teacher leadership?*

Parameters of the Study

The study focused on reflective implementation of the research platform strategy by two secondary teachers, whom I, a more experienced teacher, facilitated in the role of teacher leader. It took place over three months and involved a Social Studies 11 class and an English 10 class. There were four *Teacher Learning Team* meetings in total, including the first one in which I introduced the catalyst article and shared lesson plan ideas. There were four sources of data: the teachers' journals, notes from my classroom observations, transcribed learning team meeting notes, and the anonymous student work samples the teachers chose to share at the meetings.

Anticipated Outcomes

At the beginning of the study, I anticipated that my inquiry would provide, through teacher observation of student responses, information on the effectiveness of the student research platform strategy for secondary students. I also expected to learn about teachers' learning, as I observed the participating teachers acquire new knowledge, skills, and values through the process of classroom experimentation and shared reflection. Finally, I expected to learn about myself as a teacher leader and to develop skills and approaches for teacher leadership that could be applied in other situations.

In terms of assessing the effectiveness of the student research platform strategy, I expected that teachers would be able to help students think critically about sources and use their own words to express their understanding. I expected that when a variety of different sources were provided, students would see that there are many valuable options in print or on the internet and that information can be derived from multimodal texts as well as conventional expository texts. I expected that, in most cases, plagiarism would be reduced substantially as students learned to record information by paraphrasing. I hoped that, by the end of the study, the teachers would find that their students were more confident and competent at conducting their own research.

In terms of the inquiry process and my own learning as facilitator and teacher leader, I predicted that the professional collaboration time, which was part of the study, would offer participating teachers an opportunity to share experiences and work through any frustrations with implementing the strategy. I hoped that I would contribute to a supportive environment for these two new teachers to try the research platform strategy

and that, in turn, learning from their implementation would benefit my own teaching and leadership development.

Overview of Findings

The journey of leading the Teacher Learning Team through the scaffolding student research process was more rewarding than I had initially predicted. Unknowingly, we had set our expectations low and planned to be content with discovering that students were not *cutting* and *pasting* phrases from websites into the note-taking sections of their charts. The Teacher Learning Team had hoped to encourage students, many of whom had developed poor habits of plagiarizing, to learn correct and effective methods of completing a research project. We did not anticipate the degree to which students who had moved toward mastery with this process-oriented strategy would become more engaged and even acquire a spirit of discovery that appeared to benefit their interest in content.

Each of the three times the teachers led their classes through the inquiry process, they noted surprising benefits, such as an improvement in paraphrasing and increased consideration for the relevance of recording their own thoughts in response to the information. The students evolved from being critical and reluctant to try the new strategy of taking notes on a chart, to discovering that organizing information in response to focus questions helped them to write more concise notes and saved time. The teachers had committed to practicing the strategy three times, and with examples, extra help and time all students gained confidence and experience at adding their *voice* by recording personal connections to the information in the note making section. There was a definite

transition from the first time to the third time as students became less concerned with "going through the motions in order to get a product finished" and more interested in the process of searching for worthwhile sources and interesting data (Alison, TLT, Jan. 13). During the final session, both classes and particularly Eric's class, had become genuinely interested in exploring their topic and had ideas about how they might continue their research in the future (Eric, TLT, Jan. 28).

One of the other surprising changes during the process was the shift in the teacher's priorities. The teachers had begun with many time and product driven goals but as they progressed through the study they became more concerned with each student demonstrating their understanding of both the content and the information-gathering and synthesizing process. Students displayed this understanding in a well-completed platform chart, with focus questions, adequate sources, accurate notes from the sources, relevant connections made in additional notes, and a record of references. However, emphasis was not on the product itself because teachers observed and guided the process as well as proving written formative feedback for revisions and for improving subsequent projects. The teachers' motto became: "if it isn't good, it isn't done" and students knew they had to keep working and correcting it until the chart was not only completed, but completed well with thoughtful responses (21st Century Learning, 2011, p.2). The teachers also discovered that if they were specific about expectations and criteria at the beginning of an inquiry platform project, students were more likely to produce high quality work that demonstrated understanding.

As a collaborative team, we learned from each others' challenges and successes and also enjoyed a supportive group to share concerns, frustrations, and questions. For

example, at the meetings the teachers would work together to plan future lessons that would utilize the research strategy. For the teachers trying a new strategy in their first few years of teaching, and finding that many of the students were not excited about it at first, made the strong support network of the collaborative team integral to the success of completing the series of three projects that allowed students to master the strategy.

As a leader, I offered a non-judgmental environment and patient listening to the challenges and rewards of the work being done in the classrooms. At first I could tell that the teachers did not want to really vent their frustrations for fear of offending me. I explained that it was not important that the student research platform was completely a success or failure, it was the process that was of interest and the reality of the story behind the journey would make their stories useful to others. As the meetings progressed, the two teachers became increasingly open about some of the bizarre student responses and amazing experiences of success. I was thrilled to have had the experience of conducting the literature review beforehand, because it proved to be useful when the team encountered problems, such as what to do about the presentations that turned out to be of far lesser quality than expected. I was also glad to have several years of teaching experience to draw on when discussing ideas for lesson plans and assessment too. As a leader, I gained confidence in my abilities to lead this group and to support them throughout the study.

Contributions and Limitations of the Study

This study provided rich detail about efforts to solve a problem in specific classrooms. The focus on teacher learning and improved teaching was important because

learning for students depends on teacher learning. The Teacher Learning Team established for this study created " an atmosphere of trust, [for] both young and adult learners [to] engage willingly in inquiries that address their own compelling questions and generate creative responses to real problems" (Brown & Cherkowski, 2009, p. 64).

However, limitations to the methodology of this study require that its processes and findings be applied to other settings cautiously and reflectively. As a case study, the findings may be informative to other educators facing similar problems in teaching research skills, facilitating teacher learning through professional inquiry, or purposefully developing teacher leadership. The study cannot be considered an empirical evaluation of the research platform strategy and its findings are not prescriptive.

Chapter Summary

In this chapter I have posed a problem that emerged authentically from my own practice and is confirmed in the literature and in experiences of other teachers: many secondary students are ill-equipped to conduct their own research or inquiry projects in a meaningful way that will contribute to lifelong learning. Further, teachers are also ill-equipped to teach research skills in a way that is consistent with the expectations of 21st century learning initiatives for inquiry and project-based learning. I present Brown, Klein, and Lapadat's (2008) student research or inquiry platform strategy as a potential solution to the problem, implemented reflectively and collaboratively among teachers, as the authors suggest. To facilitate this inquiry with teachers who were interested but inexperienced, I planned an action-based professional inquiry that would support the teachers as well as develop my own instructional leadership skills. In the following

chapters, I report the process and the findings, so that other educators, administrators, or teacher leaders can learn about the student research platform, about the benefits and challenges of implementation, and about the leadership and support that may be required for this strategy to be embraced by teachers. The study is timely, given the recent emphasis on inquiry-based learning that is a key component of 21st century learning initiatives.

CHAPTER II. REVIEW OF THE LITERATURE

One purpose of this literature review is to share the research that informed my study and provided perspectives on the problem of nonfiction literacy. A second purpose is to present the background for the solution I propose, the *student inquiry platform strategy* implemented with *formative assessment.* A third purpose is to gain insights into the benefits of the collaborative professional learning processes that may help to implement a solution, as well as the nature of effective collaborative teams, the characteristics of schools that function as learning communities, and the role of a teacher leader in such settings. These three purposes contributed the main headings of my literature review: *The Problem of Nonfiction Literacy*, *The Platform Strategy and Formative Assessment*, and *Collaboration, Learning Communities, and the Role of the Teacher Leader.* A fourth area became a prominent school improvement initiative over the period that I conducted this study and I have described it under the title of *Twenty-first Century Learning.* I placed this section at the end of my literature review not only because I looked into this literature later but also because 21st Century Learning is now the educational context for all aspects of this study. The chapter concludes with some insights about what I learned as a result of conducting this literature review and a chapter summary.

The Problem of Nonfiction Literacy

In this section I explore various aspects of the problem: faced with an overwhelming amount of information available, many students demonstrate by a lack of learning strategies for finding, paraphrasing, recording, and commenting on information. Teachers are concerned with students' reliance on digital sources and by plagiarism. It is

important for educators to ensure students are taught basic skills of reading for information and note taking as there are negative consequences of not teaching nonfiction reading and research essay writing, such as plagiarizing.

Valuing Dewey Decimal in the Digital Age

Most students enjoy learning about topics they choose for themselves but the challenge for the teacher is merging "reading and thinking strategies so that kids read to learn" (Harvey & Goudvis, 2007 p.230). Teaching students how to find and analyze information and record it and comment on it with a confident voice is more complicated now than ever before. Brown, Klein and Lapadat (2009) have argued that "the overwhelming amount of information available in a digital world makes it more crucial than ever to teach students how to select, synthesize, and make meaning of relevant details accurately" (2008, p.1). Fearful of the endless amounts of cutting and pasting information the students do not understand, teachers sometimes avoid assigning research papers. Today's students have grown up in an online world; "just Google it" is the usual method of resolving disputes, confirming facts, and accessing information" (McPhail, 2008, p.1). Children are barraged with information from the internet, television, magazines, and billboards. There is more information readily available than ever before and it is crucial that students learn to be "selective and know where to go to determine what is important" (Gear, 2008, p. 87). Harvey and Goodvis (2007) have agreed that teachers need to "teach kids to find the information they need, sort and sift through it, and think critically about it (p. 230).

Discouraging the use of technology is counterproductive in an era of twenty- first century learning (Mitchell & Sackney, 2009, p. 147). The internet, when used

effectively, is an essential resource and appropriate skills need to be taught to help students negotiate through the vast amounts of information. Additionally, this technology savvy generation needs to understand that other sources such as books, pictures, maps, and videos also contain valuable information. Teachers continue to perform the ever demanding task of convincing these Google-reliant students that the "Dewey Decimal system boasts better accuracy and supreme reliability" (McPhail, 2008, p.1). Teachers and librarians often remind students that the internet is not always the fastest method of researching because of advertising and other distractions. Another challenge with using the internet for research is the information presented is often absent of prior expert editing for reliability, and the articles can be deficient in their level of organization. Regardless, whether a student conducts research with multimodal texts or exclusively with print, the steps and skills needed to conduct research well are similar.

The Plague of Plagiarism

Some teachers argue that the internet has increased plagiarism by making copying so easy that students lose track of which were their own ideas as opposed to those that are "pasted in". Many educators resort to severe punishments and have used "plagiarism detecting services such as *Turnitin.com* to discourage inappropriate copying from online sources" (David, 2009, p. 84). A more effective method of deterring plagiarism may be to teach paraphrasing and critical thinking skills. Often teachers forget how difficult it is to summarize another writer's argument and "it has been demonstrated that even professors who are expert writers have difficulty summarizing texts that are unfamiliar topics."(Moore &Davies, 2009, p.64). Shirley (2004) developed a strategy similar to the student inquiry platform (p.187). First she explains to students that inserting synonyms is

not paraphrasing. Next she guides students to study a 50-100 word passage they have chosen and identify key words and main ideas. Finally she has them write their own paraphrase of that passage. The literature that reports new teaching and learning strategies contributes to the concept that educators need to teach students effective research skills so they do not resort to cutting and pasting information together on a page. Most plagiarism occurs, not out of the desire to be deceitful or malicious, but as a result of the student's lack of confidence with note-taking in the face of an overwhelming amount of information.

In 2010 the British Columbia Teacher Librarian`s Association conducted a survey of academic librarians, and asked what their colleagues "perceived to be the most common academic research problems faced by first-year students" (Ekdahl, Farquharson, Robinson, & Turner. 2010, p.3). They also asked "Are graduates of BC schools adequately prepared to demonstrate critical thinking skills and engage in independent research?" and discovered that overall the grade twelve students were lacking in many research related skills (Ekdahl, Farquharson, Robinson, & Turner. 2010, p.3). According to the survey results, BC students:

> need to know more about how to find the right resources for their purposes, including books, journals, and data-bases; how to evaluate sources critically; how to write a good research question and a solid thesis statement; how to incorporate quotations and to cite the sources, and why; how to paraphrase and how not to plagiarize; and how and whom to ask for help (Ekdahl, Farquharson, Robinson, & Turner 2010, p. 4).

Not only would these students struggle to complete basic research requirements of first year university but they are not adequately prepared to be lifelong learners (Alberta Learning, 2004, p. 3)

Good Teaching Prevents Plagiarism

A thesis that drives my study and that is supported in the research literature is that good teaching prevents plagiarism. Many teachers create carefully planned projects to reduce plagiarism or expect all rough notes to be handed in, in the hope of reducing cheating. Some universities, such as McGill, now require students to submit their work first to *Turnitin.com* before handing it in, in order to reduce plagiarism (Adler-Kassner, Anson, Moore Howard, 2008, p. 242). During the elementary and secondary years, then, not all students acquire enough confidence in their research and writing skills to be able to cite sources correctly and write their own papers when they attend post secondary institutions. In fact, Adler-Kassner, Anson, and Moore Howard (2008) discussed a study by the Duke University Center for Academic Integrity, in which forty percent of college students admitted to plagiarizing off the internet.

Besides the typical problems with quoting, paraphrasing, and interpreting information in their own words, students also do not understand what plagiarism is. Emerson (2008) discussed research that included all faculties at Massey University, a research university in New Zealand. A survey using first year students was conducted and although ninety-two percent of the students could answer basic questions about plagiarism, they had problems understanding what correct paraphrasing entailed and the "distinctions between correct formatting for paraphrasing and quoting" (Emerson, 2008, p. 185). Perhaps even more troubling is the fact that only twelve percent of the students understood that "copied material needs to be formatted correctly as well as referenced with a citation" (Emerson, 2008, p.185) This study confirmed the need for students in

elementary and secondary schools to be better prepared regarding the correct use of references and to have a better understanding of what constitutes plagiarism.

In another study by the same university, the faculty members analyzed the student's work for evidence of plagiarism. The assignments were processed through Turnitin.com and placed in one of four categories: "no plagiarism, minor plagiarism (defined as less than six sentences of consecutive or non-consecutive copied material with no form of in-text citation, no quotations treated as paraphrases, that is, quoted with an in-text citation), moderate plagiarism (six to eight sentences of consecutive or non-consecutive copied material, and major plagiarism (nine sentences or more of consecutive or non-consecutive copied material." (Emerson, 2008, p. 186). The students were all given the identical assignment. The faculty found that 3.5% of students had committed major plagiarism, 6.3% committed moderate, and the same number had minor issues with plagiarism on their assignment (Emerson, 2008, p. 186).

Perhaps of greater interest, the faculty discovered that most students who did plagiarize had problems with the writing process and they demonstrated problems with basic writing technique. The faculty realized that presenting the methods of citation outside of the writing process had confused some students. The next phase of the study was to show the students the results and then work closely with those who committed any form of plagiarism. When they worked with these students the university faculty found that the main issue was that the students had little idea of how to use their own voice when writing academically. More time needed to be spent working on developing their voice as well as citing sources correctly. One other suggestion that came from the study

was that students work more closely with a mentor or someone who could provide frequent feedback on their writing until they have established good habits.

In this case, elementary and secondary teachers have an advantage over college or university faculty because they have more time and opportunity to circulate in the classroom and give individual help to students during the nonfiction writing process. With a class size of thirty or less, the teacher may be able to monitor the progress of each student and evaluate the need for re-teaching, providing more practice, or moving on to the next skill. The conclusion I have drawn from these studies is that the basics of research and nonfiction writing really need to be developed during the later elementary and early secondary school years as students need the time to practice and develop these skills. Rather than spending time developing their own cutting and pasting techniques that lead to unintentional plagiarism , students' time could be spent learning how to time paraphrase information and develop their own perspective and voice. Even though there may be a need for plagiarism detection tools like Turnitin, there is a greater need to strengthen students' nonfiction writing skills in order to avoid relying on punishments and threats to attempt to get students to write correctly. Teachers who emphasize the students' understanding of the research process and focus less on a summative assessment of the final product will also discourage plagiarism (Alberta Learning, 2004, p.73).

The Challenge: Reading Before Writing

Gear (2008) affirmed the need to teach many basic skills prior to freeing students to do an independent research project. Often, in an attempt to allow students choice in topics, not enough time is spent developing research skills and students are expected to

learn as they go. Gear pointed out that "finding the main idea and summarizing it are the beginning of interpreting a text, not the end" (p. 15).

I remember my first research project about endangered animals, and I was excited about the topic. The class was escorted to the library and we were directed to areas that would contain information on our topics and were instructed to read and take notes but not to copy anything from the text. There were often well meaning instructions like *Be sure to write the information in your own words*. Many students need more explanation and demonstration about what *writing in your own words* means, and what it looks like when it is done correctly. It seemed to me that in my own classroom, most students were excited about reading and understanding the subject they were studying. Unfortunately, what was missing, and what I did not initially know how to provide, was some scaffolding in order to teach the students "to extend their thinking and develop from a literal meaning to interactive to an interpretive level" (Gear, 2008, p. 15).

After students to be able to add their own thoughts, their unique voice will be developed. Harvey and Goudvis (2007) shared strategies for developing voice, such as beginning the lesson by modeling the voice that you (the teacher) hear in your head when you meet new information (p. 97). Students need to learn that it is not good enough to simply "regurgitate facts when we read: we have to listen to our inner voice to learn, understand, and remember the information" (Harvey & Goudvis 2007, p. 97). Many students download pages of information but once all those pages have been printed, they have little clue as to how to distinguish the facts that are relevant to their topic or how to organize the information around a thesis (Harvey & Goodvis, 2007, p. 97).

As Gear (2007) suggested, "the lesson doesn't end when they (the students) have figured out what's in the text – it ends when they have figured out what to think about it" (p. 16). Nonfiction is full of features, text cues, and structures that signal importance and scaffold understanding for readers. Many classrooms emphasize fiction more than nonfiction literature, even though about eighty percent of reading adults do outside of school is nonfiction (Harvey & Goudvis, 2007, p.230). So much of a typical class instruction focuses on reading fiction, yet strategies for reading nonfiction are different. Readers of nonfiction have to identify the most important details as they are reading. One technique that Harvey and Goudvis (2007) recommend is to help students make connections to personal experiences by teaching kids to think about their background knowledge and work on developing connections so that they can understand and synthesize the information.

Understanding what they are reading is an essential aspect of completing a research assignment successfully. Gear (2008) suggests five strategies to help students understand nonfiction texts. The first strategy is to *zoom-in*, "where readers recognize, locate and are able to interpret nonfiction text features, then question or infer, which is active readers asking question and making inferences to further their understanding of nonfiction texts" (p.15). Next the readers could determine importance by finding the main ideas and making connections to previous experiences to improve their understanding of nonfiction texts. The last strategy is for active readers to be able "to recognize a change in their own thinking, perception or perspective through reading a piece of nonfiction text" (p.15). Harvey and Goudvis (2007) recommended what they term "Researcher's Workshop", where students are given time to read about their topic, find information,

write about it, and actively use their knowledge as they teach others (p. 230). This method corresponds with the ideals of twenty-first century learning and its emphasis on student inquiry, choice and project-based learning supported by technology. Teachers of this technology-driven future are "facilitators of information and resources for students' own inquiries" (Brown & Cherkowski, 2010, p.3). "Teachers are no longer the providers of static knowledge", and instead are more involved in guiding students in their own inquiry as a means of making learning more meaningful. (Brown and Cherkowski 2010, p.4)

Reasons for Teaching Research Skills

Harvey & Goodvis (2007) shared a humorous rendition of a past experience with report writing instruction. Since then, she has altered her teaching methods but in reflecting back, Harvey describes the student researchers as "mere word movers," rearranging information and reporting it back (p.3). Routman echoed this notion with her explanation that "expository writing develops more slowly than narrative writing." (Routman, 2003, p. 196). She speculates that this slower writing development occurs because students have less exposure to nonfiction. For this reason she recommends that teachers include a wealth of nonfiction in their classroom libraries. She strongly encourages teachers to make time for students to write daily, but "not to expect lots of research" in the early elementary years, as often "students are asked to write research reports before they can summarize"(Routman, 2003, p. 196). Harvey& Goodvis agree with offering opportunities for students to access nonfiction because "kids can't resist classrooms jammed with real things from the real world (2007, p. 25) She explained that this type of classroom inspires students and creates a classroom that encourages inquiry.

Routman (2003) expressed the idea, also evident in the writings of Harvey & Goodvis (2007) and Stead(2006) that teachers should "celebrate curiosity and value wonder to provide a foundation for lasting learning"(Routman, 2003, p. 31). When students complete a research project effectively they have the potential to learn a great deal. Harvey & Goodvis (2007) presented a lengthy list of the benefits if student research projects or nonfiction inquiry. They suggest that when students are able to engage in research they usually have a high level of enthusiasm and engagement because they are pursuing a topic that interests them. Participating in research also offers an opportunity for students to read nonfiction literature and thereby expanding vocabulary, practicing comprehension by using reading strategies for nonfiction. Harvey & Goodvis (2007) also believe research skills help students gain confidence by developing expertise and an ability to organize information and present it in some form. During a research project the students have an opportunity to experiment with Primary sources such as interviews, surveys, video, pictures, and web pages (Harvey & Goodvis, 2007). Another benefit of research with students is that the process encourages planning, organizing information, writing clearly and working on and revising on project for an extended period.

Although Routman (2003) has argued against assigning research projects for young students, she has advocated for encouraging nonfiction reading and small group discussions. She has stated that research "has clearly shown that reading and writing are interactive, closely connected processes that support each other and that participation in strong writing programs clearly benefits both reading and writing development" (Routman, 2003, p.119). Routman explains that when students write about a topic they

understand it more thoroughly. She notes that students and adults develop meaning as they write and she argues that writing makes us "think harder"(p. 126).

Importance of Good Quality Questions

One of the most important research skills is for the student to be capable of asking themselves questions as they read. Stead (2006) has observed that even though students may not understand a certain nonfiction reading passage, they can access prior knowledge to answer basic questions (p.3). Stead cautioned teachers to avoid using broad, basic questions, especially with beginning readers, as it does not lend itself to a good discussion. However, Stead does "want children to explore three major types of connections; text to self, text to text and text to world" (2006, p.92). The teacher's questioning, according to Stead, should be important in encouraging students to think about each type of connection (2006, p.92).

Stead admitted that "good readers naturally interweave the three types of connections within a set text" (Stead, 2006, 92). He recommends educators usually break this connection-making down into manageable tasks. First he reads some nonfiction to the children and shows them some illustrations. Then he gives the learners some talk time with each other. Next he has specific questions to focus their thoughts and he writes the answers into a chart. The headings on the chart are; "Information, What We Like About This, and What We Don't Like About This" (Stead, 2006, p. 93). For a topic such as *Winter*, the children would provide factual information based on the reading and then make their own connections with the topic based on previous knowledge of the subject. Next, Stead (2006) teaches students to make text to text connections by reading two different books or a poem and a story, on a similar topic, for example, *Fall.* Students

listen to and then have talk time. Next he assists them to put their thoughts on the similarities and differences of each genre and the information in each text, by filling in a Venn diagram (Stead, 2006, p.99). Lastly, Stead helps students make text to world connections by reading a story, giving talk time, and then using well planned questions to get the students to relate some of the themes in the story to the real world. For example, in a story about gardens, the students make connections, at the end of the story, to how gardens look in all seasons, and what they already know about plants. Stead creates a chart with two headings and records information for the class. The two headings are: "Information We Read and Saw in the Photographs", and "World Connections" (Stead, 2006, p.103).

With older children Stead changes the headings of the chart to "Facts that Probably Were", and "Facts that Probably Weren't" (Stead 2006, p.105). This chart helps organize the students' wonderings and inferences and prepare them for the next step, which is placing the information into a chart with two headings; "Positive Things" and "Negative Things" (Stead, 2006, p. 106). An example topic is: "Life in the Pioneer Days, The Positive and Negative" (Stead, 2006, p. 107). In this manner, the students are able to consider the information, and categorize it in the "positive" and "negative" categories.

Stead claimed that students need to make connections with the text in order to become confident and competent in understanding informational reading. They are not simply "passive recipients of facts that had to be learned, but active and engaged participants in the texts they were reading, which brought excitement and pleasure in being a nonfiction reader" (Stead, 2006, 109). Routman made a similar point; a common

problem she sees in schools is that "we haven't taught students, at least not well enough, how to connect their ideas to text, how to think deeply about reading and how to go back to the text to confirm their thinking" (Routman, 2003, 138).

Note Taking

Brown, Klein and Lapadat (2008) recommended assisting students in organizing their information and scaffolding the teaching of research skills by using a chart that incorporates an area for voice and the students' comment. A similar strategy is when teaching note taking, demonstrate to the learners "how to take notes by writing down only a few important words – just enough to help them remember what they've learned – and ask them to share their learning, sometimes orally, sometimes in writing, in their own words"(Stead, 2006, p .33). Stead's ideas for helping students take notes when reading nonfiction are shown in Table 1.

- Make sure you read the text at least twice so that you really understand what the author has said.
- Write down the key words or phrases that you think are important on a retelling web.
- Put the text away.
- Using only the retelling web, try to retell the information.
- If you have problems retelling, look at the text again and see what extra words you need to include helping you remember.

Table 1. Ideas for helping students take notes (Stead, 2006, p. 33).

Stead also believed in modeling a strategy such as note taking. He models placing the research information into a web. Routman (2003) has also used modeling and think-aloud strategies for teaching all writing. Also in agreement with Stead, she

believed that "note taking causes the reader to pay better attention to the material at hand and to process the material at a deeper level" (Routman, 2003, p.133)

Routman (2003) found that when students keep a "notebook, journal, make notes, create charts, summaries and ask questions" it helps the older students become more reflective readers (p. 133). Harvey&Goodvis also encouraged students to be inquisitive by carrying a notebook for making connections and "jotting down thoughts while we observe the world around us" (2007, p.90). Like Stead(2006)and Harvey & Goodvis(2007), Routman(2003) also promoted using graphic organizers for students to record information in because she believed that the students would remember more than when they simply underlined text (p.134). Stead did not encourage students to use highlighters to identify important facts, however. He is concerned that learners often "include lots of ancillary information" (Stead, 2006, p.47), instead of important facts.

Stead (2006) taught students to highlight in yellow if it was important information, in green if it was interesting but not important, and pink if it was not important. Stead used to believe that note taking should be reserved for fluent readers but also mentioned that teaching note taking in the primary grades can provide far more success in later years. Kindergarten children are taught note taking by Stead by reading them a nonfiction informative passage and then asking them to tell a friend about it. Next they draw a picture of what they learned on a small individual chalk board. This provides an opportunity for the teacher to give immediate feedback and to realize how well the students are able to find the important facts. Another reason Stead liked this strategy is because the "sharing of the children's representations also provides a wonderful means to demonstrate different ways to represent the literal information presented by an author"

(p.50). Stead admitted that he has often heard stories from teachers about their own children's struggles with note taking through the years, middle school to college. Stead argued that research skills are often not taught well, do not happen naturally, take a significant time to learn and students "revert to copying because of lack of appropriate scaffolding" (Stead, 2006, 51).

Getting Started with Research

Naturally curious students can soon become disenchanted with the idea of research if it is overwhelming. Harvey argued "we need to convince kids that authentic research is engaging and we can start by helping to demystify it" (Harvey, 2005, p.89). Harvey wants learners to understand that research is an everyday life skill; from buying a car to picking out a pet, we need to be able to use research to give us information we need (Harvey, 2005, p. 89). Teachers who work with Harvey are encouraged to guide their students through the "research cycle with the following steps: questioning, planning, gathering, sorting and sifting, synthesizing, evaluating, and reporting" (Harvey, 2005, p.89). Just as young researchers are encouraged to browse and discuss nonfiction topics in Routman's (1998) classes, Harvey also encouraged students to pursue a topic and be a good observer (Harvey, 2005, p.90). The qualities of a good researcher, according to Harvey are listed Table 2.

- Researchers observe their world closely.
- Researchers always have their antennas up.
- Researchers are curious and ask questions.
- Researchers are driven to figure things out.
- Researchers think about where to find important information.
- Researchers investigate different situations and scenarios.
- Researchers listen to others, yet think for themselves.

Table 2. The qualities of a good researcher (Harvey & Goodvis, 2007, p. 90).

A librarian can provide excellent assistance for teaching students to be able to find appropriate sources of information for their topic and Harvey& Goodvis strongly urge teachers to collaborate with librarians to make libraries accessible to students. Students now often want to start their search by using the internet but Harvey recommended encouraging students to use a few other sources besides the internet to get to know the topic. It is easier to search for information on the internet if the learner is familiar with the topic already. Some challenges of the internet, according to Harvey, are the lack of quality control and validity, the possibility of inappropriate information, and the impermanence of websites (2007, p.103). Other issues with the internet are the distractions that pop up and "cyberspace gridlock" (Harvey, 2007, p. 103), which is when the internet server becomes overloaded and slow. Regardless of the challenges, Harvey still argued that the internet provides "adventuresome research" (p. 103) and can be the most effective way to access needed information.

The Platform Strategy and Formative Assessment

In this second of four main sections in this literature review, I describe the teaching strategy that I am proposing that teachers implement reflectively to address the problem of plagiarized, unfocused research papers. The *student research platform* teaching strategy designed by Brown, Klein, and Lapadat (2009) becomes a *learning strategy* when students have mastered the process and learned to apply it, for themselves, as they complete inquiry projects of their choice. However, to help students get to that point, teachers must set clear criteria for success and provide feedback that helps students move toward mastery. Setting criteria and providing feedback are prominent aspects of a recent trend away from simply grading student work to providing information about the

quality of the work to students so they can improve. The trend has been described as assessment *for* learning or *formative assessment* (Anderson & Krathwohl, 2001). Therefore, following a description of the student inquiry platform, I have included a section on formative assessment.

The Student Inquiry Platform

In this section I describe the student inquiry platform, as I understand it from reading the article that was a catalyst for this study (Brown, Klein, and Lapadat, 2009) and from personal communication, through the course of my thesis, with authors Brown and Lapadat. The description is of a two stage process. The first stage is information gathering. The second stage is synthesizing the information from several sources to create an original representation of learning. Although I conceived of a study that would implement both stages of the inquiry, the interests of the participating teachers and the needs of their students, combined with the time available, required me to focus on the information gathering stage.

Research platforms are "explicit instruction with potential to scaffold students toward multimodal literacy and purposeful independent inquiry presented with a confident voice" (Brown, Klein, & Lapadat, 2008, p. 1) When designing and teaching a research platform "teachers create multimodal text sets on topics of interest and guide students to collect information, make sense of it, and present it to peers in engaging formats" (p.1). Although the original term for this teaching and learning strategy was *student research platform*, the authors who designed it are now referring to it as *student inquiry platform*, in response to current initiatives in 21st century learning.

When preparing an inquiry platform, Brown, Klein & Lapadat (2009) recommend that teachers select a set of short texts or articles focused on a topic of general interest and order them from shortest and simplest to longer and more complex. Text sets may include multimodal sources, such as charts, graphs, maps, timelines, or videos as well as written expository text. Teachers may prepare or help students prepare a large paper chart or an electronic document that has rows in which to respond to focus questions and columns to record the relevant information from each source. The focus questions may be developed by the teacher, so that relevant information will be found in the texts that are provided. As students gain proficiency, they may develop focus questions together, with the teacher's guidance and later by themselves, when they also find their own sources.

As students read from the first source for the specific information that answers the focus questions, they write paraphrased notes (note-taking) in the first column. To introduce this strategy, the note taking should be modeled by the teacher. When readers move on to the longer and more difficult sources, they only record information that they have not already recorded. As they consider the information, students are encouraged to make notes that capture their thoughts about the information they are reading (note making), in addition to the information paraphrased from each source.

In this process, the focus questions help to ensure that students only record information that is relevant to purpose of their inquiry. Paraphrasing helps to ensure understanding, which combines with the thinking about the information expressed in the note making to prepare students to write about or present on the topic with their own unique voice. Moving from short and simple to longer and more difficult articles helps students to understand the more difficult passages better because they have already

encountered the basics of the topic presented more accessibly in the first articles. The first articles build students' prior knowledge, which supports comprehension of the later ones. Not repeating information students record on the chart saves space on the chart and saves them time. It also sets an additional purpose for reading subsequent articles: to find new information that is relevant to the focus questions.

When students have completed an inquiry platform chart from several sources, they are ready to put away all sources and work from the chart to express their learning, the second stage of the inquiry platform as teaching and learning strategy. Information from several sources across each focus question row helps students to synthesize the information that applies only to that question. The focus questions and corresponding rows of gathered information provide natural headings or paragraphs for an expository essay or sections for other representations of learning such as a slide show or poster. Thus, the structure of the chart helps students organize their text-based or multimodal representations of their learning. Teachers are encouraged to help students build their repertoire of ways to share their learning, drawing on a variety of modes of expression to showcase and develop a variety of student talents.

This expressive stage of the platform work is meant to engage students as they prepare and present meaningful information to their classmates and as they learn from a variety of peer or cross-grade presentations. The ultimate goal is student mastery of the information gathering strategy so that they can leave the teacher prepared platforms behind in favour of exploring topics of personal interest. After sufficient explicit instruction and guided practice, students should be able to choose a topic, generate focus questions, find sources and record information and comments, and finally synthesize the

information in their choice of presentation modes or formats. Depending on the age of students, this development may require repeated exposure to the research platform strategy from grade to grade.

The key to mastery, or movement from the platform as teaching strategy generated by teachers to independent learning strategy generated by students, is formative assessment. Differentiated instruction can then be based on student readiness for more independence: some students will be able readers who take to the strategy easily and they can move on to investigate their own topics sooner. Others will need more instruction and skill development through practice. Close observation of completed platform charts for article sets prepared by the teacher will make it manageable for teachers to assess skills and know how best to support each student or groups of students. Are students able to read with understanding and find relevant information? Are they able to take paraphrased notes? Can they make informed comments about the information to begin to develop a thesis or perspective that will contribute to voice in their writing on the topic? Can they synthesize information from several sources from what they have recorded in focus question rows? When students hand in their platforms, both texts and charts, teachers can see where students have underlined information, marked it with the focus question number, and recorded it on the chart. This process makes their skills visible and supports appropriate feedback and differentiation on the next assignment.

However, as Brown, Klein, and Lapadat (2008) admitted, their inquiry platform strategy has not been widely implemented. There are problems of pacing to be worked out for different age groups and text sets and focus questions to be assembled for different subject areas. The authors invite teachers to explore the strategy through

experimentation and reflection and contribute, as co-researchers, to its development. I have undertaken this study in response to that call.

Formative Assessment

If our goal as teachers is to encourage students to consider, comprehend, and then put information into their own words, it is important for them to share representations of their learning so that we can assess skill development, provide descriptive feedback, and make instructional decisions as well as help students to set personal goals. Assessing students' thinking is an ongoing venture and Gear (2008) suggested ways of gathering evidence of student learning. She explained that teachers can start by "listening to your students, asking them questions, and watching them closely as they interact with text" (p. 140). She has also recommended other forms of assessment such as "listening for evidence of application, listening to partner talk, conferring with students, and independent written assessment" (p.141).

These are examples of formative assessment, which is the ongoing gathering of information about the learning that is taking place. The purpose of formative assessment is to be able to make "instructional modifications to improve the quality or amount of learning" (Anderson and Krathwohl, 2001, p. 102). Summative assessment, in contrast, "is gathering information after the learning should have occurred, usually for the purpose of assigning grades to students"(Anderson & Krathwohl, 2001, p. 102). Formative assessment is usually used to improve student learning but summative assessment is used to assign grades.

Increased use of formative assessment has been identified as a powerful strategy for increasing student achievement (Black & Wiliam, 1998; Earl, Volante & Katz, 2011).

Lorna Earl (WNCP, 2006), a Canadian scholar, has long championed the cause of reversing the assessment pyramid. Instead of the typical wide base of summative assessment with some assessment to inform instructional decisions and even less student self-assessment, she has advocated a broad base of student self-assessment informing goal setting and instructional decisions, and contributing to a smaller pyramid peak of summative assessment or grading. To assist BC teachers with such a radical change in practice, Kaser and Halbert (2009), in their work with the Network of Performance-Based Schools (NPBS), later renamed the Network of Inquiry and Innovation (NOII), have publicized six big ideas of formative assessment; a) communicate learning intentions clearly, b) establish criteria for success, c) provide descriptive feedback relative to the criteria, d) generate evidence of learning, e) encourage self and peer assessment, and f) encourage students to own their learning. It was clear, at the beginning of this study, that these formative assessment practices would be an important part of moving toward student mastery of the student inquiry platform as a learning strategy.

Students Reflect on the Inquiry Process

It is important for learners to engage in reflection on the inquiry process because there is greater long-term value for the student in understanding the process than the production of a final product. In order to internalize the inquiry process "they need to understand and question the evaluation criteria, identify the steps in the inquiry process, and share their feelings about the process" (Alberta Learning, 2004, p.73). Reflections on the process can be recorded in a journal, in which the students write for a few minutes at the end of class to indicate how they were feeling about the process, what went well, and what they would do differently (Alberta Learning, 2004, p.73). Students should also

be able to reflect on how their experience has influenced their perception of personal inquiry and on what they have learned about themselves as inquirers. One of the main priorities is that by the end of the inquiry process, students "should be able to articulate the importance of this kind of work for developing their learning to learn skills, and they should able to see the connections between their inquiry work done in school and their work or activities that are done outside of school" (Alberta Learning, 2004, p. 73). Students who are successful in making these connections between the real world and their inquiry are more likely to feel confident and capable when applying their new skills more independently.

Collaboration, Learning Communities, and the Role of Teacher Leader

Teacher leaders are often instrumental in assisting with organizing and leading teacher collaboration and work in learning communities. Embarking on a new strategy for teaching can be tiring and challenging. However, as Mitchell and Sackney (2009) have pointed out, "teachers who feel supported and cared for by colleagues and administrators are more likely to experiment with new ideas or new practices than teachers who feel vulnerable in their school, and experiments by teachers often translate into interesting learning opportunities for students" (p.17). Most professionals find attempting a new teaching strategy to be more rewarding when they have an opportunity to plan and discuss results together and to encourage and motivate each other. Reason and Reason (2007) make a similar point: "one of the most powerful ways to gain momentum in responding to an inquiry statement is to find others who support that outcome" (p. 40).

The student research platform strategy designed by Brown, Klein and Lapadat (2009) was intended to assist teachers to enhance student learning. These authors have advised teachers to learn and adapt the strategy through cycles of action and reflection, the kind of outcomes-focused professional inquiry characteristic of learning communities. "High performing schools," argued Reason and Reason (2007), "narrow their list of pursuits and focus on areas that have potential for improving student learning" (p. 40).

In my view, improving student research skills is a worthy focus for improving overall student performance at the secondary level because students can apply to the skills they acquire to almost any school subject. Mitchell and Sackney (2009) echoed this idea with their notion that the benefit to students is the main concern of teachers in high capacity schools (p. 27). In fact, Mitchell and Sackney also indicated that the "impact on student learning was the measure the educators used to assess new initiatives, to resolve tough issues, to structure their learning and to define their success" (p.53). It is my intention for the teacher participants in this study to give feedback regarding the obvious and subtle effects on student learning.

Unfortunately pressure to prepare students for government tests can interfere with teachers' intentions to keep learning interesting and relevant. Mitchell and Sackney (2009) argued that teachers in high capacity schools are "less concerned with tests and more concerned that the children are learning" (p.65). In the twenty years that they have conducted observations in schools, Mitchell and Sackney have noted that the most dramatic difference between high and low capacity schools is the "investment teachers made with the people with whom they work" (p. 64). This means quality collaboration time with other professionals, concern about creating a positive classroom atmosphere,

and establishing connections with all people involved, including the students and their parents. In short, it means developing a learning community: one where learning accomplished by individuals is shared until changes are sustained by the group (learned) even after key innovators are no longer involved (Mitchell & Sackney, 2000).

What Teachers Bring to Leadership

Educators are able to tackle challenges in the classroom more easily when they have a clear mission and an opportunity to work together in collaborative teams (Eaker, Dufour & Dufour, 2002, p. 223) on some of the tasks that were once assumed to be the responsibility of the principal. The indications, according to the Dufours, that a team is in a cycle of improvement is when they "gather data and information, identify weaknesses, and support each other as strategies are implemented"(p. 223) According to the Dufours, the team should also gather new data and information to assess the impact of the strategies(p. 225). This process is intended to be ongoing, not an "annual event"! (p. 223). For teachers, it is easy to become consumed by the challenges of so many details and events going on in a school; however, in order to avoid frustration educators need to focus on goals over which they do have control. The collaborative team can discuss topics such as "Have we made progress on the goals that are important to us?" (Danielson, 2007, p. 19). Commitment and persistence can reduce working in isolation and hoarding ideas and materials. Ultimately, teacher frustration can be expected to be reduced in a collaborative problem-solving environment (Eaker, Dufour & Dufour, 2002, p. 219).

As schools become more collaborative, the teacher as leader concept is promoted and encouraged in successful schools. Danielson (2007) argued that in the "most

successful schools, teachers are supported by administrators to take initiative to improve school wide policies and programs, as well as teaching, learning and communication" (p.19). Schools are structured in such a way that administrators have so many managerial tasks and duties; teacher leaders are key in facilitating meaningful changes in the classrooms. Teacher leaders have the benefit of working with others in small, intimate, adaptable groups or in one-on-one relationships. Teachers have the opportunity to "attend to the quality of the relationships, insist on commitment to the school's purposes and goals and examine and improve instruction" (Donaldson, 2007, p. 28). Teachers also have the advantage of remaining at one school for more years than is typical for administrators. Thus, it is extremely important for administrators to encourage teachers to take initiative for school improvement so that the changes made and programs developed do not end when the administrator leaves. Lambert agreed, pointing out that "instructional leadership is everyone's work and we need to develop the whole school community" (2002, p. 40).

There are many ways to encourage school improvement, including establishing study groups whose members read books and articles together and then meet to discuss them. There are also vertical learning communities, which are multiple grades linked together in a common community in which teacher leaders work closely with students in instruction, curriculum design, discipline and family relations. Lambert (2002) also suggested that schools have leadership teams comprised of teachers from various departments who plan and implement the school improvement plan, and action research teams working on identifying a question about their practice and conduct research to discover new ideas and strategies (2002, p. 39). According to this view of teacher

leadership, leading inquiry to improve instruction and thereby improve student learning is an appropriate role for a teacher leader.

Qualities of a Teacher Leader

Some of the attributes of a teacher leader are those of a competent teacher. Both teachers and teacher leaders need a rich repertoire of instructional strategies and an ability to translate new ideas to daily practice. Effective teacher leaders require perseverance, open mindedness and flexibility to encourage learning for their colleagues as well as for their students. However, Danielson (2007) argued that working with adult colleagues is somewhat different from working with students (p.16). Teacher leaders are effective at coaching, collaborating, and consulting their colleagues, and of these three techniques, the one that is chosen depends on the situation. Lipton and Wellan (2007) explained that the best way to start is from a coaching perspective, which involves talking a colleague through a problem and analyzing it "(p. 30).

To be successful, teacher leaders must inspire the exploration of instructional practice, increase receptivity to new ideas, and make connections between present practice and new initiatives. Experienced teachers may be perceived as a threat if their work is seen as corrective. Some skills recommended are "developing and sustaining good listening skills, exploring the other's ideas and using a cordial intonation" (Lipton & Wellman, 2007, p. 31). Lipton and Wellman cautioned, however, that teacher leaders should be flexible about methods and avoid continually offering advice. Mitchell and Sackney (2000) affirmed the need to support improvements with interpersonal capacity-the social skills that support the collegial educator learning – as a link between personal and organizational learning essential for effective functioning as a learning community.

This relationship between personal learning and organizational learning highlights the importance of *professional conversations*: it is through language that teachers interact and learn from one another so that new practices can be sustained by the school culture. This is what how a whole school or organization, rather than an individual, can be said to *learn.*

Positive coaching relationships focus on teachers working together to develop solutions. Teacher leaders, in a consulting role, are able to help build others' confidence by explaining why they are providing particular advice so the colleague can transfer the learning to other situations (Lipton & Wellman, 2007, p. 34). A teacher leader with an inclusive style sends a message that every team member's opinion is valued and "when teachers believe that reform efforts connect to student needs, they are more willing to take on leadership roles" (Lattimer, 2007,p. 71). Lattimer also argued that "when teachers regularly discuss such topics as student achievement data, curriculum mapping, classroom visitations and lesson study, teacher leaders arise organically from within the community" (2007, p.71). Additionally, developing a safe and non-confrontational collaboration time is necessary to the effectiveness of the team. After all, there is little point to meeting if teachers reject the teacher leader or do not find the experience helpful.

21st Century Learning

From the time I began to plan this study until I completed my data collection, 21st century learning gained momentum as a major school reform concept and policy initiative in BC and worldwide. Reform is necessary because the education system that prepared generations of people to work in factories during the industrial revolution is an outdated model that is deficient, in many critical ways, in preparing young people for the

workforce now and in the future. Many young people in our schools are enduring the school day with a serious lack of engagement and there is a larger "disconnect between the realities of young people's lives and their experience of school – its curricula, modes of learning, and lack of outlets for creative energy" (Hannon, 2009, p. 9).

When asked what they would prefer, students reported "appreciating access to technology as a way to engage their learning" (Mitchell & Sackney, 2009, p. 168), which supports the use of technology for research or inquiry. A common goal of today's education systems is to foster a desire for lifelong learning and another is to enhance students understanding of how to utilize the information they receive when using technology for research. Students are naturally inquisitive and committed 21st century educators observe how their teaching, as well as student learning, has evolved as a result of our information-rich society. Figure 3 outlines some of the common behaviours of teachers who embrace 21st century learning for themselves and their students.

- move to the side and work to guide or "scaffold" the learning
- provide feedback that empowers students to move more deeply into their learning
- encourage students to have more authority over their own knowledge and inquiry
- are actively engaged in learning, assessing, and teaching
- ensure new learning takes place in active, collaborative, and social contexts, real or virtual.

Table 3. Common behaviours of 21st century educators (Alberta Learning, 2004, p. 5)

Mitchell and Sackney (2009) have also noted that today's students "want classroom activities that reflect the kind of problems, challenges, issues and experiences they would encounter in the real world" (Mitchell & Sackney, 2009, p. 167). This is yet

another reason students in this modern technology-driven culture need to be taught to evaluate, analyze, record and respond to new information. Educators, parents and community members often agree that students will continue to need basic core skills and knowledge but will likely also require an infusion of more current media and technology skills, and innovative thinking abilities (Alberta Learning, 2004, p. 5). One challenge is that for the first time in history, educators are not exactly sure what they are preparing students for, as some of the future jobs are not invented yet, "are without names, with unimaginable technology, and will exist in a context where humans will be struggling to sustain life on earth" (Hannon, 2009, p. 8). Experts have developed a list of ideas regarding the needs of future generations of workers. Many predict that employees will need to be "creative, critically free-thinking, adaptable and well-rounded adults" (Magner, 2011, p.1).

Another aspect that educators also understand is that young people will need to be prepared to know "lifelong approaches to learning how to learn" and strategies for teaching themselves to learn (Abbott, 1997, p.1). There is significant agreement about "the six basic skills and values that 21st century youth should focus on: character, creativity, real-world problem solving, public speaking, teaming, and leadership" (Bassett, 2009, p. 3). In order to facilitate this shift in educational experience from students in a traditional passive observation model to a framework with young people learning interactively, educators will need to understand how people learn (Abbott, 1997, p. 3). "Effective learning depends on emotional energy", and people learn when they are working on something that matters to them, whereas they are more likely to be discouraged by problems when the majority of the incentive for doing the activity is

extrinsic (Bassett, 2009, p. 3). Further, the 21st century framework encourages students to explore topics that interest them because studies show that when a person is engaged in a mental task that interests them it causes more parts of the brain to be involved (Abbott 1997, p. 3).

Another aim of the framework for 21st century learning is that very young children are given as much help with learning as possible, and then the assistance is progressively reduced as the child's learning skills increase. As the learner develops into adolescence they would eventually be taking "full responsibility for managing and directing their own learning" (Abbott, 1997, p. 3). Teachers are able to benefit students most when the dependence on teachers and institutions is diminished and pupils are guided to gain confidence in managing "their own learning, collaborating with colleagues, while making use of a wide range of resources and learning situations" (Abbott, 1997, p.5). 21st Century learning experts recommend "inquiry-based learning, learning through doing, with thematic and project emphasis" as goals for activities to increase student engagement (Hannon, 2009, p.10). The student research platform is a current, relevant and useful educational strategy then, as it incorporates all of these three 21st century learning goals.

Contribution of the Literature Review to this Study

This literature helped me to design my role as a teacher leader and to guide my decision-making as I led the teacher learning team. The review also informed my approach to professional inquiry (addressed more in chapter 3) and my analysis of the teacher learning team's *professional conversations*. The authors whose work is presented

here have helped shape my vision of learning teams as a functional and useful part of a teacher's day rather than extra work added to a teacher's workload.

The literature included in this review has been, for our Teacher Learning Team, a catalyst for informed action and inquiry. In the literature I examined I gained some insight into some of the typical issues that students and teachers struggle with regarding nonfiction writing projects and I discovered that my frustrations were not unique. Some of the articles shared methods educators have used to discourage plagiarism, along with strategies for encouraging students to develop their nonfiction writing skills. I have gained a better understanding for the reasons students were plagiarizing and have learned some strategies for scaffolding students towards beginning a more successful student inquiry project.

Additionally, the readings on *twenty-first century learning* and their emphasis on student inquiry and student choice helped inform my study and further inspired me to pursue the inquiry platform topic. One recurring theme in most of the literature is the twenty-first century learning concept that student inquiry using technology has become an integral part of learning now and in the future. By participating in the inquiry process, teachers gain first-hand experience of the excitement, hard work, and challenges that occurs when engaging in inquiry. Lastly, the review also includes the critical aspect of assessment and the differences between summative and formative assessment. The literature on methods of gathering evidence of student learning through *formative assessment* was invaluable for our team's understanding and evaluation of the students' performance with the research platform during the study. Reading the literature has helped me understand the importance of teacher inquiry, effective learning teams and the

development of student inquiry skills. The literature overwhelmingly points to a common need to help students develop the skills to "select, synthesize, and make meaning of relevant details accurately" (Brown, Klein and Lapadat, 2008, p. 1). One recurring theme in the readings is the problem of how to scaffold students' comprehension from a literal level, to an interpretive level. I am inspired that the literature so convincingly supports the development of student inquiry skills as a major component of high-capacity schools and twenty-first century learning objectives.

Some of the literature discussed the difference between high-capacity and low-capacity classrooms. In a high-capacity class the teacher and students are typically engaged and energized because they are excited by their choice of topic of inquiry. In the high capacity school, the teachers and students feel supported in their inquiry, by others such as peers, administrators, colleagues, and parents (Mitchell & Sackney, 2009, p. 156). After reading the literature I recognize the value of a committed team of teacher inquirers to work with; as people – teacher and students alike – who embark on inquiry without enough support typically "become disengaged when it is overwhelming" (Mitchell & Sackney, 2009, p. 181). The literature argues that one important aspect of being an effective team leader is to support the team so they remain committed and passionate about the study throughout, thereby instilling confidence and trust in each other. As a learning team, we first identified a common problem, so our inquiry. Next we focused on "owning our learning", which is such a critical element to the success of teacher learning teams and modeling for student inquirers (Brown and Cherkowski, 2010, p.62).

Chapter Summary

In this chapter I have reviewed the literature that informed my teacher leadership of a collaborative inquiry focused on implementing a new instructional strategy for teaching research skills. In the first section I explored literature that brought greater understanding to the problem of nonfiction literacy, the reasons that secondary students plagiarize, and the types of skill-based instruction that can help remedy the problem. In the next section I reviewed the student inquiry platform strategy, as described in the catalyst article by Brown, Klein, and Lapadat (2008). I explored recent developments in formative assessment that contribute to effective skill instruction through differentiation and highlighted the importance of students' reflection on their research process. Next, I moved on to consider the role of the teacher leader as it is portrayed in literature on teacher collaboration and schools that function as learning communities. In a third section, I described a powerful reform initiative that has become the context for innovation in schools: 21st century learning. Finally, I reflected on the function of this literature review in this study, further highlighting relevance of the articles chosen.

III. METHOD

In this chapter I provide a rationale for my chosen method of *professional inquiry,* which has its origins in action research but also has some important differences in emphasis. The second main part of the chapter describes research procedures for this study as well as the role I played as a teacher leader facilitating a small, collaborative inquiry team. I conclude with a chapter summary.

From Classroom Action Research to Professional Inquiry

I have drawn on literature describing action research as an inquiry method, particularly for teachers. However, I have further emphasized the professional learning aspect, resulting from cycles of action, observation, reflection, and revised action with the term *action-based professional inquiry* (Brown & Cherkowski, 2011). Professional inquiry may be based on action, as in this study, or on analysis of pre-existing information data. It can be independent or collaborative. It does not require that students be participants, although they may be. In professional inquiry, the social empowerment component of action research empowers teachers to contribute to knowledge construction and adapt innovation to the own settings rather than rely on prescriptions by university researchers and policy makers. Social empowerment for students is achieved through the deep moral purpose (Kaser & Halbert, 2009) of professional inquiry – to provide every student with the best possible opportunities for learning.

An essential characteristic of professional inquiry is that the central question comes from an authentic problem or opportunity in the researcher's own practice. In my case, the problem was my frustration with trying to teach students the process of how to use technology correctly to access appropriate resources, take notes, interpret their data,

and then write a research paper. I realized that very few students were able to perform all these tasks proficiently or independently and that I needed to experiment with some new strategies. My teacher participants shared these concerns and chose to join me in the search for a solution.

There is an interesting relationship between the problem we were addressing for students and the method by which we chose to address it – a kind of symmetry between the two. If we are to increase student achievement, Brown and Cherkowski (2010) have proposed that we improve student ownership of their learning, beginning by paying attention "to the conditions that create this sense of ownership of inquiry among teachers" (2010, p. 62). Following this reasoning, I believed that participating in an inquiry about how to teach the student inquiry process would help teachers to build a sense of discovery and ownership that they would someday pass on to their students.

Roots in Action Research

Interdisciplinary scholars describe action research as a process of knowledge construction that must have an element of social empowerment through the active participation of everyone affected (Greenwood & Levin, 2007), which in education seems to require the participation of students. Education scholars focus on the cycle of inquiry as an essential feature, describing classroom action research as educators "planning a change, acting and observing the process and consequences of change, reflecting on these processes and consequences and then re-planning, acting and observing, reflecting and so on" (Kemmis & McTaggart, 2000, p. 595). The process does not always occur in this order but the ultimate goal is that the participants believe there have been changes in certain elements of their practice. Classroom action research does

not have to be collaborative and is often done individually. The context in which classroom action research is conducted, however, is usually a social setting, and is therefore conducive to collaboration. Teacher participants often benefit when their assumptions, interpretations, or conclusions are questioned by colleagues or by an outside facilitator.

The Benefits of Classroom Action Research

Mills (2003) described classroom action research in many ways that are similar to Brown and Cherkowski's (2011) notion of action-based professional inquiry. Mills argued that action research has an important role in bringing about change, as simply "informing teachers about research is unlikely to bring about change", (p. 13). Teachers find action research findings to be useful and meaningful because they teacher have identified the focus and made the connection between the research and practice. Teachers' willingness to reflect on and change their thinking about teaching practices leads them to become successful and productive members of the professional community (Mills 2003, p. 13). An emphasis on educators making meaning from their own experimentation to bring commitments to change to their practice may address the problem identified by Fullan,(2007) that most reform is not sustained because it has little meaning for those who implement it.

Mills (2003) spoke directly to teachers when he pointed out that another advantage of action research is that it can take place without "having a negative impact on... personal and professional life" (p.13). This manageable method was particularly appealing to our group of new teachers who were spending a great deal of time preparing for classes they had not taught before. Mill's four step process is called the *Dialectic*

Action Research Spiral and it provides teachers with a practical method for proceeding with inquiries (p.18). For the duration of the study, our Teacher Learning Team followed the four step action research model as explained by Mills, in which the collaborative team identifies an area of "focus, collects data, analyzes and interpret data, and develops an action plan for sustained practice" (p. 5).

The Role of Teacher Leader

My role, as the teacher leader of this collaborative inquiry, was to guide, listen, inform and demonstrate. To be a useful guide, I needed the content knowledge that came from a thorough literature review as well as my classroom experience, as well as the interpersonal skills to attend to the teachers' concerns and interests. At the early first meeting with the participants and I provided each of them with a copy of four lesson plans, including some suggested methods of assessing the assignments. At this meeting, I remained flexible by indicating to Eric and Alison that they did not have to follow these plans; they were merely offered as a guide. I provided a copy of the platform chart and explained all the steps that could be taken to gradually relinquish control and empower students to use the strategy for information gathering themselves. As a team we discussed possible topics and units that would benefit from use of the student research platform and I continued to offer advice and feedback.

Another aspect of my role was to listen to the challenges and successes that the teachers shared and assist in finding solutions to problems and celebrating successes. I also believed that it was my job as a teacher leader to note successes and ensure that the teachers were aware of them. Throughout the study I continued to remind myself and the rest of the team that trying something new is always a challenge and especially in this

case, when the process is new to everyone: the teachers, the students and myself. As the leader, one of my most important functions was to point out successes and take time to recognize the efforts of the teachers and students in the study.

Professional Inquiry

Professional inquiry draws on traditions of classroom action research and teacher research, and in this study, the terms are used interchangeably. Both classroom action research and professional inquiry focus on a cycle of action, observation, and reflection as a means to job-embedded learning. However, the term *professional inquiry* emphasizes the right and responsibility of educators to be systematically reflective in their work and allows for the possibility of school and district level inquiry by administrators and other educators. Research, broadly, encompasses many methods, including some that may not be currently in the repertoire of an individual educator (Brown & Cherkowski, 2011). However, any professional can inquire and should be encouraged to do so in order to build high-capacity schools that function as learning communities.

Describing cycles of action and reflection as professional inquiry firmly associates this process with developing schools as learning communities (Mitchell & Sackney, (2009). Further, the notion of professional inquiry aligns with leadership mindsets as described by Kaser and Halbert (2009). Finally, a professional inquiry emphasizes the parallel processes of cultivating curiosity for teachers in order that they may be better equipped to share this approach to learning with their students (Brown & Cherkowski, 2011).Thus, there is a transition in this study from describing the collaborative process as classroom action research to more frequent description of our

work as professional inquiry. The underlying assumption is that teachers who engage frequently in their own inquiries will be better equipped to lead students in an inquiry-based curriculum.

Blending Critical and Practical Traditions

Kemmis and McTaggart explained that "classroom action research is practical not just idealistically, but in a realistic way that functions to aid in developing and improving practice in the classroom"(2000, p. 569). Sometimes "university researchers, curriculum consultants and students are involved but usually the duties of the teachers are of paramount importance" (Kemmis & McTaggart, 2000, p. 569). The right to knowledge construction by teachers is an important aspect. The main focus of classroom action research is the teachers' self-understanding and judgments, informed by professional literature. This style of research is based on teacher's evaluations and interpretations of student responses. Participants, therefore, make and learn from changes as they go through cycles of problem framing, seeking viable solutions, implementing them, and observing the outcomes before rejecting or refining them.

Classroom action research is focused on teacher learning and for this reason has been criticized because it can seem that others involved in creating the classroom experience, such as teacher assistants, administration and parents, are not involved (Kemmis & McTaggart, 2000, p. 592). Action research has also been criticized for being too simplistic due to "little methodological sophistication" (Kemmis & McTaggart, 2000, p. 592). However, in my view, the practicality of action research for teachers is of immense value, and refinements and adaptations to the method can address these other concerns. The benefit of action research is that the participants have an opportunity to

"collectively make critical analyses of their daily practice, in order to confront and overcome irrationality, injustice, alienation and suffering" (Kemmis & McTaggart, 2000, p. 592). "Suffering" as suggested by Kemmis and McTaggart, refers to the social justice orientation of action research and in teaching, specifically to improving social conditions for students, now and in the future.

As education systems become increasingly inundated with demands and public scrutiny, action research has gained in popularity because it "offers practitioners a collective way of reconnecting with questions of meaning, value and significance and of exercising personal and collective change for the common good" (Kemmis & McTaggart, 2000, p. 594). Mills (2003) suggested that there are two main theories of action research; critical, or theory based, and practical (p. 6). Critical action research received its name because it is derived from "critical theory in social sciences and humanities and by theories of postmodernism, which challenges the notions of truth and objectivity upon which the traditional scientific method relies" (Mills, 2003, p. 6). The guiding principles of critical action research are that it is: "democratic – which enables participation of many, and equitable – which acknowledges people's equality" (Stringer, 1993, p. 148). Critical action research should also be liberating – "by providing freedom from oppressive and debilitating conditions, and enhancing, by enabling the expression of people's full human potential" (Stringer, 1993, p. 148).

Although this critical theory-based approach has been criticized by some for its lack of practicality, it does provide a problem-solving approach for teachers who are committed to analyzing the "taken for granted relationships and practices in their professional lives" (Mills, 2003, p.7). It empowers teachers, as leaders, to develop

agency and choice in their professional lives, rather than function as technicians who merely deliver curriculum and policies designed by others. In addition, the critical tradition finds expression in the use of action research to improve the quality of education for all students, including those who have been marginalized in society. This is consistent with the moral purpose mindset of effective educational leaders (Kaser & Halbert, 2009).

However, Mitchell and Sackney (2009) have also pointed out the importance of improving social conditions for teachers, both for their own sake as worthy human beings and as an overall benefit to their students. Frustration and isolation are two difficulties experienced by teachers who do not have a collaborative team to assist with problem solving and sharing of resources. Thus, the social justice concept of action research is purposely broadened in professional inquiry to include improving learning for students and improving working and learning conditions for their teachers. There is an underlying assumption of the social justice aspect of critical work in all efforts to improve teaching and learning for both adults and students.

Practical action research, Mills suggests, is less philosophical and assumes that "individual teachers or teams of teachers are autonomous and can determine the nature of the investigation to be undertaken" (Mills, 2003, p. 7). Continued professional development, school improvement and teacher's reflective practice are all components of practical action research. This action research perspective also considers teachers to be responsible for decisions regarding their area of focus, data collection techniques, interpretation of data, and development of action plans for further inquiry (Mills, 2003, p.7).

In their definition of professional inquiry, Brown and Cherkowski (2011) have woven together the critical and practical aspects of action research. They advocate that classroom teachers and other educators "own their learning" by engaging in "a continuous process of reflecting on their strengths as well as their needs to be able to identify their own personalized learning goals"(p.62).

Professional Inquiry as Research Method

To highlight the blending of critical and practical traditions, and improvement of social conditions for learners and for educators as learners, I chose to describe the method for this study as professional inquiry, informed by action research. Action research is a "systematic inquiry conducted by teacher researchers, principals, school counselors, or other stakeholders in the teaching and learning environment to gather information about how their particular schools operate, how they teach and how well their students learn" (Mills, 2003, p.5). This definition emphasized that learning for educators results in action and is the result of some action. In this manner, action research is dedicated to improving the lives of teaching professionals, and their students. Mills also suggested that action research is also largely about "developing the professional disposition of teachers to be continuous learners – in their classrooms and in their practice" (2003, p. 10).

Teachers engaged in ongoing learning have the opportunity to model for their students how knowledge is created (Mills, 2003, p. 10). Some advantages of action research are that it is relevant to teachers and can become a realistic aspect of a teacher's daily practice. A teacher's usual day requires planning, implementing, and evaluating: similar processes to those a teacher researcher uses when conducting action research. Action research can be incorporated into a teacher's day without adding extra work.

Mills maintains that "if the process of action research cannot be done without adversely affecting the fundamental work of teaching, then it ought not to be done at all" (2003, p. 14). Describing action research conducted by educators as professional inquiry further emphasizes the view that curiosity, inquiry, and experimentation with credible innovation is an essential part of ongoing learning embedded in practice.

Action research is conducted by educators for themselves and for their professional community, which emphasizes the learning community (Mitchell & Sackney, 2000) origins of professional inquiry. Sharing is a key aspect of action research within a learning community. According to Mills, action research engages teachers in a four-step process: "a) identify an area of focus, b) collect data, c) analyze and interpret data, d) develop an action plan and commitments that will be sustained in practice" (2003, p. 5). Commitment to new, sustainable beliefs and practices is an end product of inquiry that is also emphasized in Brown & Cherkowski's (2011) approach to professional inquiry.

Another way of describing the action research process is: "planning a change, acting and observing the process and consequences of change, reflecting on these processes and consequences and then re-planning, acting and observing, reflecting and so on..." (Kemmis & McTaggart, 2000, p. 595). The process does not always occur in this order but the ultimate goal is that the participants feel there have been changes in certain elements of their practice. Classroom action research does not have to be collaborative and is often done individually. The context in which collaborative action research is conducted, however, is usually a social setting, and is therefore conducive to collaboration.

My main purpose in this study was to develop and improve instructional practice for improved student learning and so professional inquiry or classroom action research was an appropriate research method. Also, as a teacher leader I was concerned with building capacity for distributed leadership and professional learning. The four step inquiry cycle described by Mills (2003) appeared practical, with potential to achieve this purpose.

Process of Inquiry

In this section I have outlined the steps of the inquiry process and ethical considerations for this study. I begin by describing the research site as well as introducing the reader to the teachers who were part of the Teacher Learning Team. Finally, I describe Mill's (2003) four step research process, which is the professional inquiry model that I chose to follow in this study.

Research Site

North Central Secondary (NCS, a pseudonym) is an inner city grade eight to twelve school in northern British Columbia. At the time of this study, the population was approximately 1300 students, with a majority of the students enrolled in grades eleven and twelve. At the time of the study, many grade eight to ten students in the catchment area were enrolled in a nearby junior secondary school. The student population of North Central Secondary School is diverse in terms of culture and socioeconomic status. As each of the two participants on the Teacher Learning Team was responsible for conducting their part of the study, the study took place in two classrooms at NCS. One introductory meeting took place, followed by three collaborative team meetings. These meetings took place in quiet classrooms after school.

Acquiring Permission

Before I began the study, I completed a research proposal, which was reviewed by my faculty committee, and I also did a presentation for this group, to develop plans for the study in response to their feedback. I met with one of the school district superintendents to describe the study and receive school district approval (see Appendix A, Superintendent's Approval Letter). My study was reviewed by the University of Northern British Columbia's Research Ethics Board (see Appendix B, Ethics Approval). The school principal at North Central Secondary was excited about the research and approved it and the two participants, Alison and Eric both signed an informed consent before we started the meetings.

Ethical Considerations

Prior to embarking on this study approval was granted from the superintendent of School District 57 (See Appendix A), the principal of North Central Secondary, and the UNBC Research Ethics Board (REB)(See Appendix B). There was also informed consent from each of the teachers participating in the study. Participants understood that they were able to stop participating in the study at any time.

After the Teacher Learning Team meetings, the participants were given a copy of the meeting notes and transcripts to check for accuracy. The Learning Team participants' names and the name of the school have been changed to ensure anonymity. The participants and I worked collaboratively as a team and the participants volunteered to meet outside of instructional time, after school. Any student work the participants discussed during the meetings had the name removed prior to the meeting.

Participants have been thanked verbally for their time and have also received a personal card with a note of thanks. Each participant was provided with a copy of the summary of the thesis. Copies of the completed thesis will be made available at North Central Secondary and will be provided to the school board office as well as to the university library. I plan to continue my journey as a teacher leader by sharing our learning through writing a published article and leading professional workshops.

Participants

In this study, my role was as a teacher leader for the two teachers who I had invited to participate. I have been teaching for ten years, but during the study I was on a maternity leave, so was not teaching at this school. Alison, who is one of the participants, is the teacher who replaced me when I was on leave. I had been the cooperating teacher for Eric, the other participant, when he was a teacher candidate. Alison and Eric, the two professionals, have both started their teaching careers within the past few years and when I talked to them during teacher collaboration time, we realized we had all noticed a problem with student research skills. Collaboration time at NCS is a time built into the school day, when teachers meet to work on an initiative or other inquiry in small groups. At the time, North Central Secondary had teacher collaboration time for thirty minutes every day before lunch, on alternating weeks. So, the teaching staff was divided in half and for one week teachers from one team would supervise students, while the other team participated in learning team meetings, and then the next week we switched places.

At collaboration time, Eric, Alison and I discussed our common experience in conducting a research assignment with students. When students were assigned a research

project or an assignment that involved some inquiry, most students were excited about using computers for their research. We noted that when we took our class to the computer lab, they usually began their inquiry process by using the Microsoft word function to "cut" text from the first few websites on their screen, and "paste" it directly onto a new word document. Most students deemed this practice to satisfy the "note-taking" requirement of the assignment. Next, most students would re-arrange the text into paragraphs, adding a few sentences and a title. This, they believed, to be the method of generating a short essay on their topic. In many cases the work that students intended to hand in contained no references and in some cases was obviously plagiarized.

As teachers in their first few years of teaching, Eric and Alison had assumed that students would be able to take notes, synthesize information and write, giving appropriate credit to their sources. I was not a new teacher, as I had been teaching for nine years, but I had also noted students' tendencies toward this form of research essay completion and I was in also searching for a strategy to assist students. My previous attempts had included discussions of what plagiarism was in class and individually assisting students as I circulated the computer lab. These strategies were not successful because I found that it was not possible to help twenty-seven students individually or even in small groups. Many students would take the work home, resulting in a finished product but not a process- oriented, correctly completed piece of original writing.

Both Eric's and Alison's teaching assignments were ideal for trying the student research or inquiry strategy as described by Brown, Klein, and Lapadat (2009). I had originally considered working with a group of three participants. However, with a group

of three including myself, each participating teacher would have more opportunity to share. In this manner we were a small learning team united by a common challenge.

The two teacher participants are both in their first few years of teaching and were both graduates of the University of Northern British Columbia School of Education. At the time of the study, Eric was teaching one class of grade eleven social studies at North Central Secondary and one other class at another secondary school. Alison was teaching four classes of English Language Arts at NCS: two grade nine and two grade 10. I produced an information and consent form for the teachers to distribute to all of their students, for parents to sign if they were willing to have the students' participate in the study. The students whose parents signed the informed consent could provide data for the study, in the form of work samples that participating teachers chose to share in Teacher Learning Team meetings.

Eric was interested in participating in this study after a negative experience in September, during which he had assigned a research essay for his Social Studies class and found that many students were lost as to how to narrow down a topic, organize their information, or where to record their sources. Alison, too, felt that her students had problems organizing their thoughts in order to develop them into an assignment she was interested in methods for helping students read for information and develop skills for finding sources and managing information.

Our Teacher Learning Team's Inquiry Process

In working with the Teacher Learning Team, I led the group through Mill's (2003), four step action research method. I was confident that this framework for conducting professional inquiry would help us answer the research questions I had

identified for the study, as well as address our personal teaching concerns. We began by reading the catalyst article, *Scaffolding Student Research in a Digital Age: An Invitation to Inquiry* (Brown, Klein & Lapadat 2009), to develop a clear research focus.

In order for Alison and Eric to understand the research platform strategy, I met with them for a few hours after school on November 18, 2009. We read the catalyst article and I shared some sample lesson plans and assessment ideas (Appendix C and D). The two teacher participants were encouraged to use some or all of the lesson plans I provided. I gave Eric and Alison a sample research platform project that I had assembled and completed, as a student would do, on *The Role of Women in World War II.* I showed them how I was able to use a research platform chart to record information from the several sources included in the platform and to organize my information in response to focus questions for easy synthesis across sources. In the unit I had designed, I created three key questions and included five sources of information. I then filled in the chart as though I were a student, taking notes (note-taking) and commenting on the significance and meaning that the information had for me (note-making).

Next I provided participants with four sample lesson plans and some ideas on how to provide formative assessment or assessment *for* learning. I felt as though it would be too controlling to expect the teachers to follow a summative assessment plan that I had created and I wanted to ensure that they understood they had professional discretion about how the students would demonstrate their learning (Appendix E). Each teacher then planned to use the research platform with a few units that they would be preparing for their classes, but because Eric had a Social Studies 11 class and Alison had the English 10 classes there would be some variation in what the summative evaluations

would look like. As a team, we discussed the benefits of having the class help create a rubric for summative assessment rubric together. Together we brainstormed possible topics that would be related to the units they would prepare. The research platform chart is available in Appendix F.

At this first meeting I also made a plan with each teacher as to dates and times I might observe the classes in which they were working with students on research platform units. Tentatively, we set the first meeting date for December 15, which would give each teacher two weeks to introduce their classes to the research platform. We planned to meet after students in each class had worked on the research platform charts for a few classes and the teachers had responded with feedback. This formative assessment would be achieved by observing and by collecting work and writing specific comments on it but not recording marks. Each teacher agreed to teach three units using research platforms, so we planned on three meetings. The meetings were scheduled to allow cycles of action followed by collaborative inquiry about what had happened and how we interpreted our observations to adjust the next lessons. The meetings followed Mill's (2003) four steps sequentially.

Our Teacher Learning Team met for our second meeting on December 15, to share and interpret our observations from the first few lessons on using the platform strategy. Once we had discussed the positive aspects of the experience, Eric and Alison talked about the challenges and struggles. They shared details about their lessons and how the students reacted. Next we brainstormed ideas for improvement and they shared some modifications they had already tried. This three question method of discussing what went well, what could be improved, and recommendations for the next time, was

inspired by our catalyst article (Brown, Lapadat, and Klein, 2009 p.9). Lastly, we discussed what topic the two teachers would study next and what they would do differently now.

Our third meeting was on January 13, after the holidays and after the participants had been able to introduce a second research platform. This time we followed the same pattern of questioning as the previous meeting and again we discussed solutions to challenges. Eric and Alison shared some entries they had written in their journals and they supported their observations with anonymous samples of student work. We looked through these completed platform charts and together made a plan for what the final lessons of this semester and this study would look like.

In continuing with the *data collection stage*, the third step of Mill's (2003) four, we met again on January 28 to discuss observations related to the third and final platform unit. We shared in the same way as we did in the previous meetings and Eric shared an anonymous survey he had conducted with his students. He had asked students what they liked about the chart, what they did not like, and whether they would use it in the future. Together we read through and sorted the twenty-five responses he had collected. We also spent time at this meeting talking about ways the student research platform could be used in other classes or units and how we could share the strategy with other teachers to encourage *sustainability*, which is the final step in the Mill's,(2003),four step process.

Data Collection

Our Teacher Learning Team collected data from several three sources: a) my researcher's journal, which included classroom observations, b) professional conversations that occurred during Teacher Learning Team meetings, with reference to

participant journals, and c) examples of student work, including the student surveys that were shared at Teacher Learning Team meetings. In my data analysis, I have identified quotes and examples from these data sources as coming from my journal or from meetings with the date and the speaker noted.

I invited teacher participants to keep a journal throughout the study, to record their successes and challenges for a few minutes at the end of each research platform class. The journal was a private record for the participant and was not expected to be shared with me as the principal researcher, although at times participants chose to refer to it in Teacher Learning Team meetings. I also had a researcher journal to record my notes from classroom observations, questions I had thought of asking the participants when they were not available, and ideas I had between meetings. I shared my classroom observation notes with the members of the team to ensure their accuracy and to compare our perspectives. The meetings were another opportunity to collect data, as the teachers shared portions of their journal reflections, student work, and student surveys. I shared classroom observations and with these sources combined the data provided information to guide our conversation, collaborative analysis, and shared understanding during the meetings.

In order to share our journal notes, observations and ideas, our Teacher Learning Team met three times for approximately an hour each time. We met together after school in Alison's classroom and each time Eric and Alison brought a copy of the research platform chart they were working with and their journals. We audio recorded the meetings and after each meeting, I listened to the recordings and transcribed them, verbatim. I listened to each recording at least three times to ensure I did not miss any

information. Finally, I asked participants to read the complete transcriptions to ensure they were accurate.

The two times that I visited Eric's class I took notes on what the teacher was doing to demonstrate or model the use of the research platform and I also noted student reactions as they tried the new strategy. During half of the class I circulated around the room to watch the students work on the research platform. I visited the classes because I was interested in noting the student reaction to the method and the pacing of the lessons. I was interested in witnessing the students work on reading to find information, and their ability to make connections with real life knowledge. I also wanted to see what parts of the process challenged or frustrated the students. Because of scheduling conflicts, I was not able to visit Alison's classroom to observe.

Sometimes when an individual classroom teacher is teaching a class of thirty students it is difficult for him/her to notice each individual student's experiences, and with the busy nature of the classroom it is seldom possible for the individual classroom teacher to make notes as the class occurs. Even hours later, a teachers' reflection of the class could become generalized with small successes or challenges in the class might be forgotten. My visits and observations gave me context for the Learning Team meetings because I understood what they had been doing so that their comments made sense. I was better prepared to offer support, having seen what they might need.

Chapter Summary

In this chapter I have traced the traditions of classroom action research methods and provided a rationale for using the term *professional inquiry,* which blends practical and critical purposes. I have introduced my participants and outlined the process that I

used to lead teacher participants through cycles of action, collaborative reflection, and planning based on observations and meaning making in Teacher Learning Team meetings, the transcripts of which served as the main source of data for this study. I have described my role as teacher leader, as I understood it, and noted my researcher's journal, which included my classroom observations, as a second important source of data.

The inquiry process described here helped me to empower teachers to work collaboratively on integrating the research platform into their classrooms, because we were genuinely interested in making meaningful change to benefit both our teaching and our students' learning. As a team we had recognized the weakness in student research skills, and were interested in implementing a change effort. This chapter presents an inquiry method that is compatible with the sense of discovery that we, as teachers hope to inspire in our students. As teachers, we were modeling the curiosity, problem-solving, and meaning making that we hoped would lead to ownership of learning and sustained change for ourselves and eventually for our students.

IV. FINDINGS AND INTERPRETATIONS

This chapter has two main sections. First I tell the story of this study sequentially, documenting the experiences and professional conversations as we proceeded through Mill's (2003) four step action research model: *identifying an area of focus*, *collecting data*, *analyzing and interpreting the data*, and *developing an action plan with commitments that will be sustained in practice* (p. 5). This linear account acknowledges that in cycles of action and reflection, participants collaborate in analysis throughout the process, making decisions for the next action based on their shared interpretations of student responses to the action they have taken so far. Action and analysis were revealed in our Teacher Learning Team conversations, which described our experiences during the study, the students' reactions to using the strategy, and modifications the teachers made to the process and materials. I conclude this section with a description of my observations of Eric's class as they worked with the inquiry platform.

In the second main section, I address the research questions for this study with information from our professional conversations and from my classroom observations and other journal entries. I analyze the data to address the effectiveness of the student inquiry platform and the collaborative inquiry process for our team, and reflection on my perceptions of teacher leadership as revealed through this experience of collaborative inquiry. I conclude the chapter with a summary.

The Teachers' Experiences

For the first step of Mills (2003) action research model, *identifying an area of focus,* all three members of the Teacher Learning Team were interested in improving our

learners' skill of conducting inquiry and organizing data because of the importance this will have throughout their lives. We agreed that student inquiry skills are an integral part of the twenty-first learning concept of students owning their learning. As a teacher leader, I had reviewed the literature on how to teach research skills and provide formative assessment, the benefits of teacher collaboration, teacher leadership, and learning community development, and a new vision of twenty-first century learning. Based on this experience, I met with our team and together we made a plan as to how we would introduce the student inquiry platform strategy to students. We also planned a timeline for teaching the units of study in which the platform would be featured and for my classroom visits.

Organization of the TLT Meetings

We had two main purposes for our Teacher Learning Team meetings. One was to share what experiences each teacher had with using the inquiry platform with his/her students and the other was to discuss suggestions and offer support for each other in the teaching of the next lessons. In this way, each meeting addressed the second and third of Mills' (2003) action research steps – *collecting and analyzing data.* When we planned for the next inquiry platform assignment, we were *developing an action plan.* However, developing *an overall action plan and commitments* for subsequent teaching was more difficult because the two participating teachers were both on limited duration contracts and not sure what their future teaching assignments would be. For all three of us, commitments have become clear as we have continued to use inquiry platform strategies in our new assignments, Alison and Eric in new schools and myself in my previous

school when I returned to work after my maternity leave. (I share my subsequent teaching experiences as commitments in chapter five.)

We met a total of four times, including the first meeting on November 18, when participants were introduced to the inquiry platform. Once the participants tried the scaffolding strategy with their students we met again Dec.15, January 13, and finally on January 28. We met in Alison's classroom after school each time. There we were able to reduce distractions by closing the door. We audio-taped each meeting and later I transcribed the recordings, verbatim, and shared the transcriptions with Eric and Alison.

I had pre-planned questions for each meeting in order to direct the conversation, but soon found myself adding questions to inquire more about what had occurred or was being suggested. The main question I reflected on regularly regarding collaboration was *How is the collaborative inquiry approach effective for helping teachers implement and adapt the strategy*? I usually guided the conversation at the meetings but Alison and Eric directed the conversation occasionally, with comments or questions they wanted to explore. The meetings were exciting and inspiring with many positive stories. The teacher participants, Alison and Eric, were obviously excited by the results they were noticing with their students. This excitement was displayed in both their voices, which were full of energy, and in their posture, which also demonstrated interest. I also noted the relief both teachers experienced when they discovered that they had similar difficulties in getting a few students to complete the research platform charts. Considering that these two teachers were both teaching full time for the first or second year since their student teaching practica, the meetings served as a support network.

Meeting Procedure

At each meeting I asked three questions to invite the teachers to share and analyze data and make their next action plans, and from there the questions and conversation developed. The first question I asked was, *What went well?* Later I also asked, *What were the challenges?* And lastly I asked, *What changes or recommendations would you make for next time?* Participants shared journal entries and reflections on lessons in response to my questions or to raise a new point. As the inquiry evolved, Eric and Alison became curious co-inquirers; both trying the student inquiry platform strategy repeatedly, with different topics, and monitoring the results.

Classroom Processes

After the initial meeting when the Teacher Learning Team shared ideas for implementing the scaffolding platform into their classrooms, the two teachers did their own lesson planning. They planned the first lessons entirely on their own and then we shared ideas and modifications for the following two. Figure 5 outlines the lessons that were completed by each teacher as part of the study. Later in this section, there is a more complete description of the lessons and the assignments.

During these first lessons Alison and Eric demonstrated how to complete the chart with sources provided by the teacher. I had suggested that they consider having students work in partners but neither teacher did this. Instead they preferred to have students work on their own charts but they did allow the students to chat with others around them. For example, Eric's class was set up in such a way that the desks were in pairs so that students were naturally set up for accessibility to a partner anyway. Alison's students

were in a computer lab, sitting side-by side so they were also in close proximity for asking a peer for some help.

Alison English 10	Lesson 1 Life in the Deep South in the 1960s. Complete the chart.	Lesson 2 Biography of a Canadian Poet. Complete the chart.	Lesson 3 Choice of: -Segregation in the USA in the 1960s. -The role of Women in America in the 1960s.
Eric Social Studies 11	Lesson 1 Women's Role in World War II. Complete the chart.	Lesson 2 Biography of a Canadian Prime Minister. Create a poster presentation with a group.	Lesson 3 Research one major theme from the course. Write an outline for an essay. Students may select any topic from the course.

Table 4. Topics for scaffolding research platform

Alison's first lesson with the platform strategy. Alison's first topics were related to the setting for the novel *To Kill a Mockingbird*, which is set in America in the 1930s. Alison provided three sources and three focus questions so that the main learning outcome for the students was to be able to read the sources provided and take notes relevant to the focus questions. The students also filled out the note making section, making connections to things they already knew or wondered about.

Alison began the lesson with a demonstration, in the computer lab, of how to create an electronic version of an inquiry platform chart for gathering information from the sources. Alison used the projector in the lab to provide a visual demonstration of how to make the chart and complete their note taking and note making and then she circulated to assist students who needed extra help. The students observed the demonstration and

then all students completed the exercise but some needed more time and more assistance. It took the students almost the entire class to create the chart.

Alison had provided three sources and three focus questions so that all the students needed to do was to read the short written articles, find relevant information and paraphrase it or comment on it on the correct part of their chart. Alison provided two articles, one with pictures embedded in it, and she also provided the students with a link to a youtube clip with video on the topic. She circulated around the class to give feedback while they worked and when they handed the chart in, she provided written comments to guide improvement for next time. The most common correction Alison made was for the students to consider more thoughtful remarks for the note making section. More than half of the class was writing a minimal amount – only a sentence or phrase. Most of these responses did not make any connection to other resources or to the student's lives or prior knowledge. However, most students appeared capable of finding and paraphrasing the information from the sources that was relevant to the focus questions.

Alison's second experience. After that first lesson, each teacher adapted their plans accordingly. Alison had a class with a wide variety of abilities, so she had the students work with using the research platform twice more: once again to do research on a topic related to their novel study, and then the last time to complete a biography of a Canadian poet. For Alison, students made the chart themselves once and then simply re-used their own template for subsequent efforts.

When Alison taught the second scaffolding platform, she again chose topics based on the novel *To Kill a Mockingbird.* The students gathered information on one of the following three topics: segregation of African Americans in the USA in the 1930s, the

rights and typical lifestyles of women in the 1930s or the economy in the USA in the 1930s. This time Alison provided the students with three focus questions for each of these topics, but only one source. Her expectation was that students would search for two other texts that would provide information related to the focus questions.

When they were beginning this research, the class was half way through reading the novel. Alison provided the students with a question bank which they could choose their three focus questions from, but they completed the rest of the research platform themselves, including recording thoughtful responses in the note making section. Many were able to "relate their historical research findings to events that had happened in the novel, which really started to inspire more interest in both the African American history and reading *To Kill a Mockingbird"*(Alison, TLT, Jan. 13). Alison made this interpretation as she observed the industriousness of the class when they were reading their sources and the intensity with which they were reading the novel also.

Prior to this student research project, it had taken the class a long time to settle into silent reading time but after three days of gathering information, when students went back to reading the novel, there was almost immediate silence. Our Teacher Learning Team agreed that when students gained stronger historical background knowledge using the platform, they increased their understanding of the novel and their interest in it. The students started to be able to make more real-world connection with the novel, especially after watching African American historical video clips on YouTube. Alison was excited that "this time they found some different sources, rather than just articles. Some found historical videos online and others looked at some pictures" (TLT, Alison, Jan. 13).This experience helped students, who may have had little prior knowledge about the

challenges for African Americans in the Deep South during the 1930s, connect with the novel on a deeper level. Alison made an important generalization related to inquiry and engagement:

> I realized the students are more interested in the topic when they are discovering the information. I had presented some pictures, and maps with some facts about the Deep South in the 1930s, when we started the novel, but the students really seemed to genuinely connect with it when they were the ones finding the sources. (Jan. 13)

When we discussed this idea at the meeting, I volunteered that "likely it was still useful and necessary to provide basic historical knowledge as you started the novel, but that as you progressed through the novel the students became more curious as well" (Jodie, TLT, Jan. 13). This notion of student-driven, project-based learning aligns with the principles of twenty-first century learning. Based on Alison's experience our learning team agreed that we would recommend the teacher or students do some pre-reading on their broad topic before choosing their key questions.

Alison's final project. The final project, of the three Alison did with her class, was a biography of a Canadian poet. The students chose key questions from a question bank Alison created because she was concerned that the students would have problems generating interesting questions for the biography. Alison worried that that students "would just pick dead-ended questions like *What year was the poet born*? and *Where are they from*? During this final research project, the students were required to find their own sources of information and according to Alison "this time they didn't panic when they had to find the sources",(TLT, Jan. 28). She found that with this group of grade tens of varying capabilities, by the time they were doing the third project they had gained enough confidence to work almost completely independently, "with the exception of one or two

students", (Alison, TLT, Jan.28). The chart was only accepted for submission when it was completed proficiently. If Alison noticed the students submitting incomplete charts with missing information, she simply handed these back with clear instructions for how to correct it before re-submitting it. The students were not expected to use the information they collected to complete any related assignments, such as a piece of artwork, an essay, or a presentation. The focus, therefore, was on completion of the note taking and note making correctly.

Overview of Eric's lessons. Eric used the student inquiry platform to do three projects with his Social Studies eleven class. After doing the initial practice with a paper chart in the classroom, they moved to a computer lab and used a chart that could be downloaded from Eric's website. For the first inquiry project, all students worked on the same topic and the textbook was the exclusive source. The requirements of the second inquiry platform experience were to a biography of a Canadian politician and then demonstrate their learning by working with a group to create a poster. With their team of three or four, the students were expected to present the poster to the class. I attended the class when the students were working on the chart for this topic and I observed them presenting the posters.

The final assignment involved choosing a topic, creating five focus questions, finding five sources, and then doing the note taking and note making; students had responsibility for the entire exercise. Eric's final project was created to facilitate review for the provincial exam. He offered the students a choice of themes to be reviewed. The students used the inquiry platform to narrow their focus, find information, and document the sources that they had collected and were to synthesize. Next he asked the students to

generate an outline for an essay, based on and synthesizing the information they had collected. They handed in their chart and their outline for the essay for Eric to grade, using a rubric the class had generated together.

Eric's first inquiry platform experience. The purpose of Eric's first lesson on the topic of *The Women in the World War One* was to introduce students to the research platform process by working with the textbook as a source using focus questions provided by Eric. With this assignment, Eric began by reviewing the skills of note taking and note making, rather than developing focus questions and searching for relevant sources, which came later in his lesson sequence. Eric had used a data projector to demonstrate the procedure the students would use to gather and organize information, showing a visual of the chart, with focus questions. As a class they read a passage aloud and then thought about what information they would write into the note taking and note making sections for each focus question. Eric had photocopied the chart for the students. He provided wait time for thinking and then had the students share their responses with a partner before writing their responses on their own charts.

Next, he asked certain students to share their thinking with the entire class and typed in the responses on the demonstration chart, while the students watched and listened. When I observed this lesson I noted that I was impressed with Eric's tactic of allowing time for students to think of their response prior to his modeling of a desired response. I also was impressed with how Eric demonstrated the usefulness of the chart and described it as a streamlined, simplified process for making notes. When students asked questions about why they could not just write the notes in point form, Eric enthusiastically showed how this method would help them reduce the volume of

information and focus on the key ideas (Jodie's journal, Dec. 14). When the students were concerned that they did not have much space to write in the chart, Eric explained that keeping the note taking concise would assist the students in recording necessary ideas to use later in combination with their own thoughts on the topic. Eric noted that one student insisted that she "could take notes better if they had some lined paper, and just wrote notes in point form on the topic presented" (TLT, Dec.15) Eric conceded that they could do that first if they wanted but that they still had to fill out the chart also. Unfortunately this student had gotten into the habit of copying information almost verbatim onto her page, believing it was notes. Eric worked individually with her to demonstrate how to read for information and utilize the chart to narrow her focus. He did this by reading the passage aloud to the student and then having her put a response to the key question based on what she had heard. By the third research platform assignment, this student had finally abandoned her strategy of writing pages of irrelevant notes and she was able to use focus questions to guide her information-gathering.

Eric's second inquiry experience. The next time Eric assigned the students to groups of three or four participants and they gathered biographical information on a Canadian prime minister. They had been studying prime ministers in their Social Studies 11 class together, so the students knew a few basic facts about them. Each group was assigned to a different prime minister and they were required to create their own focus questions and find three sources also. Eric had the class brainstorm a list of possible focus questions and commented if he thought the question would be too broad or too narrow in focus. Next the groups worked on developing the focus questions and had them approved by Eric before they went to the computer lab to begin finding sources.

The students already had some background information on their prime minister from previous readings in class, so Eric suggested avoiding the website Wikipedia. The groups of students were able to sit side-by-side in the lab and they each started searching for sources and discussed findings as they went. Eric reported that "it was surprising how well the students worked together; they were not competitive about who found the most useful website: if it was a good one that had the information needed in response to the key question, then they focused on that"(TLT, Jan. 13). Each student was required to each fill out the platform chart, even though the final product would be a group presentation. Eric wanted each student to "experience the process of note taking and responding to the note making section. It is important that each individual practices that" (Eric, TLT, Jan. 13). Most of the students were able work quite independently and confidently, which provided Eric time to circulate the room and help students who were struggling to find a source or were still wanted to check with him before writing their own response in the note making section. Eric explained that "for some students, their confidence is low with regards to sharing their own thoughts on a topic, so they wanted to tell me what they were thinking first, to see if it sounded too basic" (TLT, Jan. 13).

Eric stated that he was inclined to accept almost any response, just to encourage students to try it. He had the feeling that if he criticized some of the reluctant students' efforts to respond to the note making section, they would panic and look for a statement to copy from the website. This was not the case with the entire class; in fact more than one third were making strong connections to facts they had previously read about the prime minister and were not feeling the need to have teacher approval for every step of the process. By circulating among the students, Eric was able to observe how many

students were receiving significant help about what to write in each section from their group members. Eric wondered how these students would do with the final individual project. He decided that "having the groups allowed students to share their ideas with a peer before actually recording them" (Eric, TLT, Jan. 13).

"It seems that some discouraged learners would rather not complete a project than try it and have it be incorrect" (Eric, TLT, January 13). Eric made this observation when a few students were busily poking each other with pens and using the computer to play online games. When he inquired about how they were doing with their assignment, he pointed out the positive work that had been done and that he was "impressed with the point form notes they had made"(Eric, TLT, Jan. 13). The students explained they were having problems finding information for their final question. When Eric began reading the website they had found, he discovered it was written at a very high level and the students had problems with the vocabulary. He reminded the students of the school's online database, and showed them how to access it again. Once he had guided these students, they were able to complete the rest of the exercise satisfactorily on their own. He noted that "it seems that at a senior level, students are embarrassed to ask for help and avoidance becomes a common coping factor. I sensed that if I pressured these students to produce a product, without much support at this stage, they would be searching for something to copy, in order to pass",(Eric, TLT, Jan. 13). When Eric said this at the meeting, I agreed and shared that "sometimes, as teachers of secondary school, we assume students are confident with note taking and note making skills, but if we become too outcome-oriented, students are likely to continue to get good at finding ways to get the assignment done, whether it's cheating or copying or whatever, rather than focusing

on improving their own skills so they can do the process themselves", (Jodie, TLT, Jan. 13).

After this class in the computer lab, Eric's students spent one class thinking about findings from their inquiries and deciding how to best display the information on posters to present to the class. Eric shared a few ideas he had about the evaluation criteria of the poster and then asked students to contribute their thoughts on how the poster should be evaluated. I was pleased that he had made an attempt to establish criteria but I believe that presenting these criteria to the class in the form of a rubric would have avoided problems with the presentation. I visited Eric's class the day they were presenting their posters and I noticed that not everyone could hear the presenters or see the smaller print on the posters. This aspect of the project was disappointing because in some cases the opportunity for groups to learn from one another was lost. I was grateful, though, that the main goal of having each student work through the research platform process satisfactorily was successful. The quality of their presentation skills can be improved with time and practice (Jodie, Journal, Jan. 11).

Eric's final project. The third and final way that Eric used the inquiry platform strategy was to have the students select a topic for end of semester review from a list of possibilities he had compiled. These were major themes from the course and students were expected to produce focus questions and find five sources to complete an inquiry on one of the topics. Eric also required a final product, which was an outline of an essay. The Social Studies 11 provincial exam requires one essay on the exam so Eric's objective was to provide the students with an opportunity to practice the planning for an essay on the exam. Even though Eric had already read through the writing rubric for the provincial

exam, he provided a copy of the rubric he would be using to evaluate the student's outlines (Appendix E). Students completed the entire chart electronically and Eric provided assistance as needed. A few students wanted to check that their focus questions were acceptable but after that the entire class was able to proceed confidently and independently.

The students who needed assistance last time and were shown how to use the school's online databases were much more independent and confident this time. Students were given two classes in which to complete the information gathering and the essay outline. At the end of the first day many students asked for some clarification as to what the outline would look like. The next day Eric spent the beginning of class providing the students with an example of an outline. The focus questions provided the titles for the headings in the outline. To Eric's surprise, every student in the class was able to finish the outline independently. However, Eric valued the chart as much as the outline because he wanted the students to continue to understand the process.

Eric noted a higher level of industriousness and enthusiasm for this assignment than students displayed at the beginning of the semester. He wondered if it was "because it was a final project and students were interested in improving their mark before the exam" (Eric, TLT, Jan. 28). Alison asked if maybe it was because the students felt confident with the process now. When Eric was marking the outlines, he noted clear organization of the focus questions and he was thrilled to see the students had included their connections and thoughts in the outline, as he had encouraged. In the note making section, a few students still wrote very little or simply noted questions they had about the information. For example, as Eric had noted in his journal, one student wrote "I am

wondering why women waited so long to try to get the right to vote?" (Eric, TLT, Jan.28). This being an end of semester review, Eric had been expecting more sophisticated connections to related themes and ideas, such as another student's response:

> During World War II women were relied on more heavily to do more important and valuable jobs because they had gotten the right to vote. Their right to vote helped women to prove they could handle large amounts of responsibility and war time desperation required that they step up. It seemed that the reward was recognition as a human being! (Eric, TLT, Jan. 28).

About one third of the class was able to research the final topic thoroughly and also link it to other themes that had been addressed in the course by expressing their thinking in the note making section. A second third of the class was able to answer focus questions proficiently and make some general statements that linked to other knowledge. Some students were still in the stage of simply being curious about finding out more on certain topics and wondering about related ideas. Eric was satisfied with the students' efforts and was thrilled to see the entire class complete the assignment satisfactorily. Eric was curious about whether students who continued to wonder about more ideas were simply responding with that because they were not really making connections and had to write something. He was comforted by the thought that perhaps these students were genuinely interested in finding out more about these elements of Canadian history. Perhaps inquiry into one topic would lead to an interest in discovering more details and stories from the past.

Eric's reflection on his final project. In thinking about his final platform assignment, Eric realized that even though not all of his students wrote the sophisticated observations he had hoped for, the assignments appeared to foster lifelong inquiry and an interest in learning. His students had not necessarily failed to make connections between

the major themes in the course – they had managed to get to the end of the course demonstrating a desire to learn more. At this final meeting with the Teacher Learning Team, I spoke about the connection I noted here between Eric's final project and the 21st century learning model. Some of the main comparisons I mentioned were that Eric's students were offered a choice of topics and the assignment was project-based, which are prominent elements of 21st century learning. Additionally, the students were genuinely interested in learning more and with continuing to pursue the topic beyond the end of the course, which indicates movement toward the kind of student engagement and ownership characteristic of 21st century learning.

My classroom observations. As an observer in Eric's class I was fortunate to be able to take in the entire classroom atmosphere without being concerned about answering student questions or attending to their demands. As an observer I was able to walk around the room and note the types of comments and perceptions students had, as well as what the pacing was like for this grade 11 class. I noted that students spent at least ten minutes resisting this method, insisting that they knew how to make notes already. It is possible that the later in their secondary school education that a new method is provided, the more skeptical the students may be. Also, a more experienced teacher may have exuded more confidence in introducing the method, and in that way ended up with less discussion surrounding resistance. I found it interesting, though, that all students completed the chart within the hour long class, in differing amounts of time and with varying amounts of assistance. In this way, Eric was able to differentiate his instruction because students were all expected to complete the same assignment, with the same textbook, but some

were provided with individual assistance and were given extra time to complete the assignment.

The second time I observed Eric's students they used the research platform and worked in groups of three or four to complete the chart on a biography of a Canadian prime minister. Eric and I had agreed that he should assign students to their groups in this case based on his formative assessment of their skills with the research platform the first time. Eric asked the class to brainstorm some of the ways in which they should be evaluated on the poster presentation. Three or four student volunteered answers like: "there should be several details about the prime minister", and "each person in the group should have a job"(Jodie, Journal, Dec. 1). Eric re-worded their responses with "there should be evidence of three specific focus questions about the prime minister, answers to each, some responses in the note making section of the chart, and a record of what each person in the group contributed" (Jodie, Journal, Dec.1,).

The students worked together to develop the focus questions, fill out the platform chart using sources provided in the classroom, and then they produced a poster to demonstrate their learning. On the poster they were expected to include the focus questions for their inquiry and they had to present the poster to the class. I watched the presentations and was impressed by the quality of the focus questions that the students had generated. Each group had some unique and interesting facts about the prime minister they studied and partly because the topic was already narrowed down for them, each group successfully completed the poster and presentation in two classes. Because of scheduling conflicts I was not able to visit Alison's classes but I was able to see Eric's

grade eleven social studies class twice. Both observations helped me gain insight into the successes and challenges of teaching the inquiry platform strategy with these students.

Reflections in Response to the Research Questions

In this section I reflect on the experiences that Alison and Eric had with teaching the new strategy, as well as on our collaborative experiences in Teacher Learning Team meetings, in terms of my three research questions. To preview the findings, teachers struggled persistently through student resistance to the new strategy until most students saw the benefits of focused reading, paraphrasing, and making personal connections to information. Our collaborative work was instrumental in the successful implementation of the strategy over time and through trial and modifications for each new assignment. Finally, my teacher leadership learning revealed the importance of ownership for teachers, too, as they participate in an inquiry with informed suggestions for direction but flexible guidance as well.

Effectiveness of the Inquiry Platform Strategy

In this section I present and analyze data relevant to my first research question *How is the research platform effective for building students' skills?* and the related question: *What changes, modifications or scaffolding steps would the participating teachers suggest?* Overall, I discovered that the two teachers found the strategy highly effective because of the use of repeated assignments, ample formative feedback, and differentiation based on student needs. Applications, modifications, or refinements that Alison and Eric introduced to the inquiry platform model included the specific assignments they designed the changes they made to the platform chart format, and the

scaffolding they used to teach students to generate focus questions and find their own relevant sources. These contributions reflect the fact that the focus of this study, as directed by the interests of participating teachers and the needs of their students, was on the information gathering aspect of the platform strategy rather than on students' multimodal expressions of learning produced from the information. Classroom-based studies of the expressive stage of the platform strategy are an area for further research.

A note of explanation may be helpful here. Although part of my interest in this inquiry began with a concern for developing student voice in the expressive stage of the platform strategy, this was not the main concern of the participating teachers. It turned out that the time we had for the study was not long enough to develop the proficiency that students need to have for information gathering before they moved to synthesis and to creating expressions of learning. It may also be true that our focus on the information gathering stage occurred because our shared concern with reducing plagiarism became more of a priority than my concern with developing voice.

The poster and presentation assignment in Eric's classes did allow students to demonstrate their learning but, again, was not conducive to assessing whether students were using their voice more clearly. Perhaps the interest in voice, particularly in an expository essay, was a personal goal for me, more than it was for the teacher participants. If it was really their goal too, there would have been assignments that assessed the development of learners' voice in written work. Once we started working with our students and the student inquiry platform, we realized that we would need to adjust our original goals. With only eight weeks left in the semester, we were not going to be able improve all students' skills enough to transition from the chart to the essay. With

more time, however, it would have been a realistic goal and it remains a topic for further inquiry.

Students resist change. After working on the research platform strategy for three classes, both teachers were disgruntled about the students' complaints about the new way of organizing their research findings. At first, many of the students did not want to use the platform chart to record information. At our TLT meeting, the three of us brainstormed ways to help students who struggled and empathized with the difficulties in trying a new strategy. We conversed about the idea that change is difficult for any of us and considered that some of these students are motivated by trying to find the "right" answer and get the best mark. As a team we decided we need to continue to help students focus on the value of understanding the process of how to use the research platform. I also reminded Eric and Alison of the Dylan and William (2001) idea that teachers need to be very mindful of their use of formative assessment, or students may avoid difficult tasks that involve deeper thinking (p. 6). Instead students will gravitate towards task completion rather than mastery of the more difficult skills of synthesizing and interpreting. As a team we decided to continue to circulate through the classroom to connect with students while they worked on the platform and to keep utilizing observation as formative assessment. Students also turned in work so the teachers could provide more specific written feedback.

Setting learning goals. Originally, I thought the teacher participants might use the students' work on the platform chart to provide formative assessment for the information gathering stage and then have students use the information in their charts to develop an essay or presentation that could provide the summative assessment. We

realized that mastery of note taking, understanding, processing, and synthesizing information was more important at this point than creating a finished final product to display the learning. We wanted to continue to send a clear message to the students that work on the chart was finished when they had successfully completed all aspects of the chart with thoughtful consideration. Alison and Eric found that the skills of their grade ten and eleven students were adequate enough that by circulating the room the entire class, they were able to stay connected with how each student was proceeding. The plan was for the teachers to check in with each student and provide anecdotal feedback, such as comments about choices of wording that was especially descriptive or a note making real-life connection that was particularly intriguing. We did not want the students to simply write something down in each space and consider it complete. The point of insisting on completion of the chart was that students would then demonstrate understanding of the information as well as become independent in the process of gathering information.

Considerations for assessment. Our learning team also discussed the benefits of including students in the development of the summative assessment rubric. Both teachers had used their first platform assignment as an opportunity to provide formative assessment, with written feedback on particular ways students could improve for next time. Both Eric and Alison used the final two assignments as a summative assessment as well, and marks were collected. However, the teachers still provided specific feedback regarding improvement for next time and strengths of the assignments as well. Evidence of my own learning about formative assessment can be seen by examining the summative assessment plan I had provided for Eric and Alison at the beginning of the

study (Appendix D). I have learned so much about assessment since then, so that now I recognize the lack of detailed criteria and the focus on product in the marking scheme. Written formative assessment was a much better choice, because it provided more meaningful feedback to students than the summative style marking scheme I had provided.

However, in other ways my teacher leadership could have been improved, not because of a lack of assessment knowledge but because of inexperience with the leadership role. At one point, Eric was having problems with students producing poor presentations. Therefore, at the following meeting the team worked together to draft as sample rubric that both participants could use to offer students criteria for presentation of the learning that followed information gathering and synthesis. Although providing assistance to the teachers is an example of a positive leadership initiative, I was disappointed that as a leader I had not specifically inquired about whether the teachers were providing students with the criteria when they began the assignment. My lack of experience in leading this sort of team was evident in this case and in hindsight I should have asked a team of new teachers to consider all details of their assessment. I was mistaken in my assumption that they had done this.

Formative assessment. Each time students worked with the research platform chart, the teachers collected it and wrote specific feedback on it, in addition to the oral feedback they had given as they circulated among students in the classroom. The feedback was often related to depth of response in the note making section. However, other types of feedback included "notes don't relate to the focus question," or "next time add more notes from the source to answer the focus question more completely"(Jodie,

Journal, Jan. 13). Most students remembered to record the references properly and completed the chart, without leaving any blank columns. When they first started, the note making area had few or no responses. By the second or third time they used the chart, the students became more confident about including their own responses while they were working. They were finding that if they missed that step and went on to the next question, it was difficult to remember the thought pattern from the previous focus question.

The teachers who participated in this study found the student inquiry platform to be an efficient vehicle for providing formative feedback to students. They found it easy to look through completed charts and evaluate whether the students were able to find and understand answers to focus questions in the readings. The teachers were able to check the paraphrased notes in the note taking sections for accuracy and they could check the note making columns to assess whether the students were able to provide thoughtful, connecting responses to the information. Both teachers liked the format of the chart and found it more effective than any other research method they had previously used, in allowing them to evaluate students' information gathering skills.

Formative assessment and frequent correction is key to improvement of student's work and ideally the teacher is able to check all students' focus questions before they proceed with the research. However, Alison found that with the numbers and diverse levels of needs in her class, it was not realistic to expect students to wait for the teacher to be available before they moved on. One solution Alison suggested was for some students to choose focus questions from a teacher-created *question bank*. Another option that I suggested was to have students work in groups or pairs and self-assess each others' focus

questions, particularly now that they had worked on using the chart a few times and were familiar with the expectations. I suggested that in the future students might be able to use a rubric to guide their self and peer assessment (Jodie, TLT, Jan. 28).

Before I introduced Eric and Alison to the student inquiry platform strategy, neither teacher had required students to use any specific format for organizing their research, and so evaluating the information gathering process was onerous because it meant sifting through pages of messy, disorganized notes. Previous attempts at note taking involved students "copying sentences onto paper and changing a few words here and there" (Eric, TLT, Jan. 13). Eric added that plagiarism became obvious to him when he asked students to explain the meaning of vocabulary in their notes and they had no idea. Using the platform strategy to gather information definitely helped the students be more concise with their note taking as they read for a distinct focus question and then paraphrased their answers.

Another discovery made during our collaborative action research was that the platform chart allowed for efficient and timely formative assessment that contributed to differentiated instruction. The scaffolding platform allowed for students to work at their own pace through differing research topics with the teacher gradually releasing responsibility (Routman, 2003). This is an advantage as the teachers in this study were able to have many students working at differing stages in one classroom. This concept is compatible with the 21st century learning ideals of differentiated instruction and promising practices supported by research.

Feedback includes constructive criticism. During the second meeting I talked about times in the past when I had stopped student presenters early in their speeches and

asked for them to speak more clearly. I explained that this is awkward to do at first, but better to give that feedback then to have the entire class sit through three minutes of wasted time because they cannot hear or see what is being presented. Eric agreed and stated that he was not sure what to do in that case and he did not want to seem rude by interrupting. At this point I was glad to have the benefit of ten more years of teaching experience and I shared the story about the time early in my teaching career when I had allowed a student to complete an entire three minute speech so quietly that we hardly heard a word of it, a fact that was quickly pointed out by the student's peers (TLT, Jan. 13). After a brief chuckle, our Teacher Learning Team discussed the value of providing constructive criticism as well as positive feedback, in order for students to benefit the most from any experience at school. Alison made an analogy to professional sports players, commenting on how poorly athletes would perform if no one ever pointed out what could be improved and exactly how to make those improvements. I also shared some of the main points from the Wiliam and Black (2001) article, *Inside the Black Box*, in which the authors discussed the need for students to understand what, exactly, they must do in order to be successful. This concern focused on criteria for presentations, the expressive stage of the platform strategy. However, our realization of the importance of constructive criticism as well as positive feedback applied to our response to the information-gathering stage as well.

I congratulated Eric and Alison on their modeling of the expectations of a good quality platform chart and for insisting that every component be completed to demonstrate understanding. I appreciated how both teachers considered the information gathering a work in progress, and although some students were able to finish it in class,

the teachers insisted that the others continue working until the chart was completed with meaningful responses. I explained how I believed the student inquiry platform method would be of little value if the platform chart was considered complete when it simply had *something* written in the boxes. I approved of the time that Alison and Eric were investing to be particular about the quality of student responses. Both teachers had required students who had not completed satisfactory charts to work on them at lunch time, which provided incentive to complete the work and more assistance from the teachers if that was what was needed.

Increasing success with focus questions. It was interesting to see the development that occurred in students' skills and attitudes, so that by the last meeting the teacher participants were noticing that the students were pleased to be creating focus questions before they started their searches. This strategy had been a new concept for them but they soon recognized its benefits. In both Eric's and Alison's classes, the students commented that by creating the questions ahead of time, their research was much more focused than simply going to internet sites and writing everything they found on a general topic. Typically, without the guidance of the platform strategy, most students used a search engine to find information on a broad topic the teacher had assigned, and then after reading and cutting and pasting information they combined it in an essay. The students' information was sometimes limited to the first few sites they came across on the internet. The research platform provided a method of guiding the students toward being successful at not only managing the information they were gathering but also narrowing down the topic to a manageable size and focus.

As an inquiry team, we had not anticipated the power of the platform strategy to assist students in narrowing their focus. Usually, there are several students in the class who want to study and write a three to five page essay on broad topics such as *The History of African Americans*. It can be an enormous challenge to convince students that we cannot discuss everything about *The History of African Americans* in such a short essay. We agreed that *focus* was one of the surprising benefits of the research platform: we had not predicted how challenging it was for students to create focus questions and how successful the focus question aspect of the chart would be for teaching students to narrow their search. One issue that the inquiry team noted was the need to work on developing strategies to help students generate focus questions that are meaningful, interesting and focused enough. One of our biggest surprises in this study was that some of the grade ten class still struggled to write focus questions on their own, even after practicing this scaffolding platform process three times. These students were still depending on Alison's question bank to choose three questions they wanted to pursue. Based on these results, our inquiry team realized that assisting students in writing their focus questions is one direction that needs further inquiry, strategy development, and practice for both teachers and students.

To summarize, our Teacher Learning Team noted that one of the main advantages of the student inquiry platform strategy was the ability to assist students to consider the importance of focus questions. Before the study occurred many students would simply write pages of notes on a generalized topic. The emphasis on carefully considering the focus questions either by selecting them from a bank of questions or creating them on

their own helped students understand how first identifying what you want to know about a topic is essential to the success of an inquiry.

Success for all. One significant advantage of the inquiry platform strategy realized in this study was that all students were successful in learning to focus and manage their research and the only ones who were not successful were the ones "who just don't show up"(Alison, TLT, Dec. 15.) By this, Alison meant that the platform strategy made it possible for all students who attended regularly with an interest in learning to be ultimately successful in improving their confidence in note taking, note making, and finding their own relevant sources.. Alison found that students with a variety of learning styles and capabilities were able to use the chart and she was amazed that "they all seem to get it"(Alison, TLT, Jan. 28). Of course, as with any assignments, students needed differing levels of support, which concurs with the claims made about formative assessment, in which the teacher perseveres with each student in order for all to achieve success and feel positive about learning – even those who may have previously fallen behind (Wiliam&Black,2001, p. 9). Alison noted that the incremental steps involved in learning the inquiry platform process as a learning strategy ensured that all students would be capable of completing a research project correctly and almost entirely independently.

Differentiation. In each class, expectations were clear and students had to demonstrate that they understood the text and could take notes effectively before they went on to the note making. As students were working, the teachers were available to check the note taking, offer feedback, and give specific suggestions. By breaking down the steps to complete a research assignment, the students seemed less likely to become

frustrated and adopt defensive behaviours to hide their lack of ability. I admitted to the others that in years past, I would have tried to complete more of the research process more quickly with a class, but this methodical and supportive method helped all learners develop competency.

Alison agreed and was surprised that "even though we are going slowly, the advanced kids weren't complaining, they were just doing a better job, which is nice because we can go slowly for those who need it but the advanced kids don't feel held back" (TLT, Dec.15.) In this manner, the process allowed for differentiated instruction more than we had anticipated that it would. Alison also noted that one student "was able to find all three sources herself the first time," whereas the others were relying on the teacher's recommended sources the first time (TLT, Dec. 15). Our TLT found that there are many ways to customize a unit of study that includes an inquiry platform and the students who finished the chart easily, "could be assigned to find more sources or do a more sophisticated project" (Jodie, TLT, Dec. 15). Alison also noticed that "some students got competitive and thrived on finding better and more sources (Journal, Dec. 15, p.3).

Developing lifelong learning. In spite of their success, Eric's class was not entirely convinced that the chart was a learning strategy they would continue to use. His grade eleven Social Studies students had been using other systems, such as writing notes in point form, and the change made a few uncomfortable. Eric also noted that "a couple of kids did say they don't like to do it this way," and one student even insisted she write out the notes in point form and then copy them into the chart (TLT, Dec. 15.) He seemed deflated and disappointed by these comments, as though the rest of the team would

perceive that in some way he was not going to be able to convince this group of students to cooperate. I responded by reminding him that due to the fact that he was working with grade eleven students who had likely practiced other ways of conducting inquiry and organizing information, we need to understand that some would struggle with the change. This may be true because the inquiry platform chart encourages much more thinking and interpreting than simply writing down point form pieces of sentences copied nearly verbatim from a book. I encouraged Eric to consider that it is important not to get discouraged and to remember that "teachers have to take risks in the belief that such investment of time will yield rewards in the future" (Wiliam and Black, 2001, p.9).

On a positive note, Eric noted that there was "no cutting and pasting" and for the first time with his class the students had recorded information that was focused on the focus question, rather than large volumes of broad information about the subject in general (TLT, Dec. 15.). When asked to explain why cutting and pasting was not an issue, Eric speculated that when students are forced to consider more carefully what information they are collecting, they are not "copying verbatim from a webpage, which is what the students did in September" (TLT, Dec. 15.). Creating the focus questions beforehand encourages the students to think more selectively about what information to gather, so the "cut and paste doesn't really fit because they aren't just looking for random things, they are looking for specific things" (Jodie, TLT, Dec. 15). Both teachers explained often how focus questions could be useful in real life. Student response confirmed the idea that when teachers demonstrate the possibility for usefulness beyond the secondary classroom, students are more likely to be interested in trying something new – even if it requires hard work (Mitchell & Sackney, 2009, p. 148).

Note making challenges. When Alison first tried teaching the students how to use the research platform, the students were given the sources and key questions so they were only responsible for filling out the note taking and note making sections. The note making section caused frustration and misunderstanding among many of the students. In many cases the students were not used to forming an opinion on what they read and instead put an evaluation of the source or an inconsequential comment like "this is cool", I don't care," or "I don't understand." Alison stated that she had to assist about a third of the students during this first attempt at using the chart. Eric also reported that students wrote things like "this was a good source," and tended to comment on the quality of the source rather than what connection they made with the information.

In our first meeting as an inquiry team we agreed that students are not used to having their opinion valued. As a team we realized that students are rarely asked their opinion but as teachers, we assumed they were. Until we tried this exercise, we had not analyzed how little we ask students to explore their thoughts on a subject. This is an important shift in formative assessment. Students are usually concerned with finding the "right" answer and many were uncomfortable with writing a comment that they were not able to find in the text! With the twenty-first century education concepts in mind, however, these skills of thinking for themselves is part of helping "pupils to take active responsibility for their own learning" so that they "become capable of life-long learning" (William& Black, 2001, p.10).

Modifying wording to increase understanding. As a team, we discussed making a wording change on the platform chart to help students know what to put in the note making column, because in some cases students had problems remembering what

the term meant. Even though teacher participants had explained and demonstrated, when the time came for the students to do the exercise, most either did it incorrectly or asked the teacher to explain again before they then continued to struggle with what to write. On the chart that Eric put up on his website for students to access, he put a little explanation beside note making which stated "your thoughts on the information" (Eric, TLT, Jan. 13). Our teacher learning team decided we would be more likely to have students complete the chart correctly by replacing the directions with something like: *your opinions on the notes taken and any comparisons you could make based on information you already know about the topic.* By the third time using the student inquiry platform, most of the class was placing more thoughtful comments in the note making part of the chart. Eric stated that as the students became more used to the note making concept many of them "needed more room to put all of their comments and suggested that the chart be modified to give more space"(TLT, Jan. 15 p.3). This is a contrast to the first time the students used the chart and many "tried to hand it in with the note making section empty, or with inappropriate comments" noted Alison (TLT, Jan. 15, p. 4).

Developing student voice. We had not anticipated that the students would have as much of a struggle understanding what note making means, as described in our catalyst article. As Eric stated: one student wrote: "lots of information, but pictures were the hardest to find" so Eric changed the instructions underneath the note making heading on the chart to: *opinion on the content of the source, not the opinion on the source*, which was causing confusion (Eric, Jan. 15, p. 7). It seems as though as the students approach the senior levels of high school they perceive their opinion to be less of value and are focused on reporting information recorded from sources exclusively. Alison admitted

that "only the highest functioning [students] really got it" (TLT, Dec. 15. p. 7). She stated that "a lot more than just the lowest quarter of the students were frustrated with the note making section" but she also attributed some of the problem to the students being "lazy and not wanting to do it and respond to it" (TLT, Dec. 15, p. 8). Alison mentioned that it sometimes seems the students just want to "write something down", instead of carefully considering the focus questions. The students were very much task oriented but by the time they had used the strategy three times they had learned the process and they were demonstrating mastery of the strategy by making it their own. As a team, we attributed the improvement to practice and the fact that students had earned greater autonomy to choose topics. It seemed as though the students were increasingly motivated to complete the note making section because they were making connections that contributed to their comprehension of the information and to the likelihood that they would be able to express their learning with their own voice.

Eric noted that at the beginning many of his students were "still confused and thought they were commenting on the source or something; so would put things like "this was a good source" (TLT, Dec. 15) As a team we decided it would likely help the students to spend more time practicing the note making skill before integrating note making into the research platform. It would be helpful if in the years prior to arriving in senior secondary school, the student had more opportunity to share their written thoughts and opinions about non-fiction reading. Perhaps that will happen within a few years because of the recent focus in elementary schools on making connections as a reading comprehension strategy for both fiction and non-fiction (Gear, 2008). Another strategy at the secondary level might be to have the students see how their own thoughts about the

significance of the information can lead to an interesting thesis in a piece of writing or a report.

An increasing need to teach library skills. Both teachers found that many students were generally less skilled in accessing resources in the library than they had predicted. Only one girl in Alison's entire class chose to use a book as a source of information. This particular student did not know how to use the library to find a book so Alison asked the teacher-librarian to help her. Alison lamented: "she had to learn how to look up the book, go out and find what shelf it was on, and learn to use the table of contents" to find the information she was interested in(TLT, Dec. 15). However, both Alison and Eric had adequate access to the computer labs and they were content to allow students to utilize the internet and web-based sources for the bulk of their research.

During the first meeting both teachers expressed concern about the students using *Wikipedia* for their research and considered not allowing its use. In the end, both teachers were comfortable with Wikipedia as a "spring board" to give students some basic information on a topic before finding other sources. Alison decided to give students samples of appropriate university sites, such as the poet biography assignment. Eric chose to give students samples of websites too and did not allow Wikipedia as a source, but did encourage students to look at the references for the Wikipedia information and consider going to some of those articles and sites. Some students knew very little about their topic so found it helpful to use Wikipedia first.

Question bank modification. Many of the students found completing the first chart, where the focus questions and sources were provided, to be an easy task. However when it came to creating their own key questions, some students expressed anxiety. Eric

provided focus questions the first time and then he asked the students to develop questions for subsequent projects. After providing the focus questions for the first project, Alison helped the students begin to create their own questions by giving the students a list of possible questions and the students "mixed them and created their own questions from what I gave them" (Alison, TLT, Jan. 13). Alison noticed that one thing her students found helpful was that "they already had the questions so they could find information for those questions rather than just finding random information and trying to make it fit" (Alison, TLT, Jan.13). In this manner, Alison was modeling what good quality questions would look like. Her formative assessment of these students' skills indicated to her that they would need this support in order to be able to make effective questions next time – perhaps in a few more classes.

Alison was inspired by Eric's idea of the biography project, so she had her grade tens work on doing a biography of a Canadian poet to begin their unit on poetry. Alison found that some of her grade ten students got so caught up in detail questions about a birthplace or siblings that they did not find more interesting and unique aspects about the poet. For her, this was proof that providing the questions was beneficial to helping the students do meaningful research that is a positive and educational experience for them. In our December meeting I agreed with Alison as evidenced in the statement; " focus questions [are] critical to the level of success of the entire research project" (Jodie, TLT, Dec. 15). As a team, we had not anticipated grade 10 students would require so much assistance generating the focus questions; however, we agreed it is better to assist students by providing examples than to have them proceed through the project with questions that are not really worthwhile. Generating focus questions required a deeper

level of thinking than we had realized and as educators we need to consider that "to think for yourself (and not just work harder) can be disturbing to many" (Dylan &Wiliam, 2001, p.9).

Emphasis on process. Through their own inquiry process, the teachers realized it was important for the students to be proficient with each skill, such as note taking and then note making, before adding more steps. Alison's students for example, needed so much focus to be able to complete the note-taking and note-making well that most were continuing to choose key questions from a question bank, rather than generate their own. In this manner, the students and teacher were able to focus on the quality of the notes, connections to the notes, finding appropriate sources, and recording the references in the chart. A few students, who were competent at those tasks within the first two times using the chart, were able to explore create their own focus questions.

Even the most skeptical of grade eleven students were using the inquiry platform strategy to organize their review for the final exam and demonstrating willingness to learn more, as evidenced in their note making. These difficult and disgruntled students had become inquisitive inquirers, to the amazement of our entire Teacher Learning Team.

Both teachers found it challenging to implement this new strategy with senior secondary students who had developed many short cuts and coping strategies to deal with producing and conducting research , and making notes without necessarily understanding or making their own connections to those notes. Students had used these coping strategies successfully to complete research assignments that were graded for the quality of the final project. At the end of this study, members of our Teacher Learning Team had

helped students begin to shift from coping to learning, through our emphasis on the research process rather than the product alone.

One of the most dramatic shifts brought about by this study in both teacher and student thinking about research projects is the increased emphasis on the inquiry process and less focus on the product. The emphasis was created by the teachers providing ample time for each step of the process and by providing feedback on each small step of the journey. For Alison's students, three research platform assignments ensured that the students became increasingly confident with choosing focus questions, selecting sources, taking notes and citing references, as well as making notes as a step toward developing voice for subsequent projects that would include the expression of learning.

Summary of findings. In this summary I review the preceding section to focus attention on our teacher learning team's key observations about the effectiveness of the student inquiry platform strategy. Through the process of this study, we learned that secondary students' resistance to change in research strategies, possibly due to the deeper thinking required, can be overcome with persistence and repeated assignments. As students began to master the strategy, they began to realize its benefits for themselves. Specifically, our students became more curious and engaged as they gained independence and learned to generate their own focus questions and find their own sources. The spirit of discovery displayed by some students was a surprising but welcome outcome, when we had set initially set out just to eliminate the plagiarism that occurs as a result of unfocused cutting and pasting from electronic sources.

To achieve these inspiring outcomes, we learned that it is important to set clear learning goals and criteria for successful information, as a basis for formative assessment

that includes both positive feedback and constructive criticism. For us, the sequential steps of the platform strategy led naturally to formative assessment, which was the key to differentiated instruction and student mastery. Above all, we found that the use of focus questions to guide reading for information and develop manageable topics is critical to the success of any research project. Further, we realized that focus questions and note making are the features of the platform strategy that are most likely to help students realize the value of their own interests and opinions and eventually lead to voice in their nonfiction writing. We were pleased to observe that the incremental steps and visual organization of the platform strategy helped us to scaffold all of our students to success with inquiry projects. Our final judgment of the effectiveness of the strategy from our own experience can be expressed as a *commitment* (Mills, 2003): the *student inquiry platform* developed by Brown, Klein, and Lapadat (2008) is more effective than any other method we have used for teaching research skills, particularly when the strategy is taught using formative assessment. We expect that this strategy will become a sustained part of our teaching practice and the basis for further spirals of inquiry (Halbert, Kaser, & Kohn, 2011) as we develop new assignments and move into more focus on the expressive stage of the strategy. We also expect that the power of the strategy will grow as we are able to share our knowledge with colleagues. We expect that students who become familiar with the strategy from year to year and class to class will tackle new topics with greater independence. Although our understanding of 21st century learning concepts is emerging, we believe the student inquiry platform strategy makes the essence of these new ideas accessible to us. Student learning will be more easily personalized when

students are confident in their ability to choose and focus topics, gather relevant information, and share their learning in a meaningful way.

The Collaborative Inquiry Process

Each time our teacher learning team met, our joint focus was on implementing the platform strategy. However, in keeping with my research aims, during these meetings I was also thinking about how the collaborative process of inquiry and my leadership could be designed or adjusted to better support teacher learning and successful implementation. I did not share my concern for managing the professional learning process, with Alison and Eric, nor did I discuss it specifically with them. However, I did record my reflections about the collaborative process, how it was unfolding, my role in facilitating it, problems that arose and my thoughts on improving the process, in my research journal. From these notes and reflections, as well as from the two teachers' I have drawn a number of inferences about the collaborative process, which I discuss in the following sections.

Achieving our purpose. Overall, I consider our collaborative process to have been successful because through our cycles of planning, acting, and observing we attained our main goals of bringing about practical improvements in the two classrooms (Kemmis & McTaggart, 2000) and sustained changes in our instructional practice (Mills, 2003). One reason that I believe that we achieved instructional changes that we will sustain is that these changes held meaning for each of us (Fullan, 2007). The study grew out of a shared teaching problem that we shared; thus the experience was meaningful from the outset. The personal significance of a new and effective way to teach research processes grew as Eric and Alison applied the strategy with their own students and

curriculum and had opportunities to reflect, in conversation with each others, on its challenges and benefits. Commitment to continued use of the strategy grew as Alison and Eric responded to the positive effects of the strategy for their students. Although we, as educators might not appreciate the potential of a strategy we read about or heard about, we appreciated the effects of persistence with the strategy and the evidence in the more confident voices and faces of students as well as in the increased quality of their work. As an orderly way to overcome the frustration previously associated with research assignments for both students and teachers, the student inquiry platform became significant and meaningful in the minds of Alison, Eric, and myself.

Finding strength in the team. During our meetings Alison, Eric, and I enjoyed sharing the experiences, surprises, and challenges of teaching students to use the inquiry platform strategy. After the first meeting, both Eric and Alison were visibly relieved to discover the other had also received criticism from the students about using this strategy. The students were highly resistant at first and some resented not being able to jot down ideas in point form on lined paper. Our inquiry team time helped strengthen one another to continue regardless of the complaints. It was noticeable and encouraging, however, that as the study continued the teacher inquirers found each session with the students to be less overwhelming as the students required less assistance and understood better what the expectations were. Our team members enjoyed sharing these surprises and both Eric and Alison were relieved to find that he or she was not the only one who experienced challenges in helping students find appropriate sources. This mutual support and encouragement was an important benefit of the collaboration.

Another benefit of the inquiry team, particularly for these teachers relatively new to the profession, was the camaraderie that was formed as the teachers shared their experiences and assignment ideas. One example of this collegiality occurred when Alison decided to do a biography assignment with her students based on the one that Eric had done with the prime ministers. At the second meeting, Alison was wondering about how to incorporate the platform with her novel study and as an inquiry team we assisted her in developing some possible topics that related to the novel for students to study. It was also during this meeting that Eric discussed his desire to somehow use the chart to assist the students in review. I suggested using the platform one final time before the final exam to have the students develop a greater depth of knowledge about a particular topic they already studied during the semester (Jodie, TLT, Dec. 15). Thus the three of us served as a "sounding board" and source of ideas for each other.

Beyond the collegiality, related to instructional processes and planning, there was an emotional component that contributed to our ultimate commitment to the strategy and possibly to collaborative inquiry as frequent, if not continuous aspect of our teaching practice in the future. By the end of every Teacher Learning Team meeting both Eric and Alison left feeling encouraged, energized, and inspired to try the strategy again. Hearing their exciting results made me want to teach it, too; I felt encouraged rather than full of the dread that I had experienced in the past when I thought about teaching a research unit.

Collaboration, which included the guidance of myself, a more experienced teacher leader, supported experimentation by Alison and Eric, as Mitchell and Sackney (2009) suggested would happen in a high capacity professional environment. With both cognitive and emotional support, Eric and Alison were able to work through frustrations

and solve problems as they emerged. They were also able to recognize and celebrate their successes. We have no way of knowing whether these teachers would have implemented the strategy successfully without our three-way collaboration. However, research on the effectiveness of professional development suggests that presenting a strategy to teachers seldom ensures that it will be applied in their classrooms. Mills (2003) developed her approach to action research in order to remedy the lack of effectiveness of other forms of professional learning. In the case of our Teacher Learning Team, I found that her approach was successful.

Embedding inquiry in teaching practice. Alison and Eric were able to utilize the scaffolding method to teach units in the curriculum, while Mills' (2003) approach to action research was a helpful foundation for our collaborative process. Mills' work helped me see how to make the study manageable, practical, and not overwhelming for the participants. His cycles of action and reflection contained an essential fourth step, commitment, which corresponded to my purpose of implementation to improve teaching practice and student learning. Although we did not identify each step in the action research process during our professional conversations, understanding the cycle of inquiry that grows out of action research traditions helped me to guide the discussion with a simple routine of questions about what worked well and what we might plan for next time. As in the professional inquiry process outlined by Brown and Cherkowski (2011), the Mills' approach presented a plan for inquiry that contributed to manageable job-embedded learning for teachers because the approach allows for teachers to implement the strategy during class time. Besides the lesson planning for how to teach

the new research strategies and teacher journaling, the collaborative component of the approach is the only aspect of the study that required additional time to meet after school.

Summary of findings. My interpretation of the data from this study has led to three important findings in response to my research question about the effectiveness of the collaborative process for our Teacher Learning Team. First, the collaborative inquiry process brought meaning to the professional learning, which was a crucial factor in the sustainable change to teaching practice that occurred. Second, the collaborative process was significant if not essential for supporting teachers through experimentation and refinement long enough for the new practice to take root. Third, our collaborative professional inquiry inspired by Mills (2003) and Brown and Cherkowski (2011) provided a manageable route to effective job-embedded learning. However, the success of our collaboration can also be attributed to aspects of teacher leadership, as described in the next section.

Teacher Leadership Learning

In this section I consider data relevant to my third research question: *What does this inquiry teach about teacher leadership?* I propose that the most prominent leadership lessons from this study are the importance of an inquiry mindset (Kaser & Halbert, 2009) for an actively participating teacher leader, a willingness to follow the lead of participants as they gain ownership of the innovation and the inquiry process, and ample preparation to provide knowledgeable support through difficulties that will arise. A few of the skills I developed included the ability to create a safe, supportive and inclusive atmosphere for sharing at the meetings, and the ability to both guide and encourage team members. I was able to guide them to try new lesson plans, experiment with activities they had formerly

done differently, and support the teachers while they tried assessment strategies they had not considered before.

Participate in the inquiry. When we first embarked on this study, Eric, Alison and I had predicted that the main outcomes of teaching students to use the research platform would be a reduction in plagiarizing and less cutting and pasting of information onto a page. Some students had become so accustomed to cutting and pasting together information taken from several sources that they were resistant to change. We were surprised to discover that when one of Eric's students was asked if the chart helped him, he complained he would rather "just make the essay as you go," to which Eric interpreted to mean "the copy and paste method" (TLT, Dec. 15). Together we realized there are many other research skills that students need to be taught, explicitly including finding sources, extracting information from different types of sources, making appropriate notes, and making personal connections while considering what those notes mean. I had prepared myself to lead this study by studying the catalyst article and conducting a related literature review but my role as a co-inquirer with the participants taught me a great deal more about the complexities of student learning and the instructional strategies that were needed. Although I was not participating as an inquirer in my own classroom, I was genuinely curious about the effectiveness of the strategy and so I approached teacher leadership with the inquiry stance that Kaser and Halbert (2009) have identified as effective for school leaders.

Allow for ownership. At the beginning of the study I provided the participants with lesson plans, a list of four possible assignments, and marking schemes. However, I was pleased that the teachers had the confidence to use some ideas that I provided but

also combine them with their own lesson plans. This creative adaptation allowed these two young teachers the freedom to do what they believed to be the most productive for their classes. The student inquiry projects or assignments that they designed kept the assessment manageable, which was important given their full teaching load, The inquiry process was not sabotaged by expectations that were beyond the reach of teacher participants or that appeared overwhelming to them.

As the team leader, I was impressed by the various modifications the teachers made in order to improve the usefulness for their situation. Alison made the platform strategy her own when she modified it to provide a list of possible focus questions from which students could choose. Eric changed the layout of the chart slightly and posted it to his website so students could use computers to fill it out. Both teachers were able to apply the platform strategy in a variety of assignments that corresponded to their prescribed curriculum. Each teacher used the chart for three different projects or assignments, including creating biographies of poets or prime ministers, exploring the setting or issues of a novel, and researching topics in depth to review the major themes of a course. I believe that a sustained change in their approach to research assignments would have been less likely for these teachers if the strategy had been prescribed or if they had been expected to implement it only as demonstrated. The potential of collaborative inquiry was achieved because I was curious about how participating teachers would find the strategy useful, rather than prescriptive as to how it must be practiced.

Considering that both of these two teachers were in their second year of teaching, and this was their first time teaching these specific courses, I decided that implementing

most of the strategy, with some personal choice, would be most productive. As Mitchell and Sackney (2009) have commented, in schools that function as learning communities, a directive "approach might work for some people, [but] it is not motivating for others" (p.150). My goal was for the co-inquirers to be inspired by the inquiry and not intimidated or frustrated. It was of paramount importance that the participants in the learning team felt as though they had input into the direction of the inquiry and they were able to make the inquiry platform strategy their own. According to Mitchell and Sackney, teachers of a high-capacity school feel "free to make mistakes, to fail miserably and to use the failures and mistakes as valuable learning opportunities" (2009, p. 191).

An inquiry method based on cycles of action, reflection, and revision is inherently optimistic. Difficulty, such as student resistance to the strategy or confusion as to how to make personal response notes, are not framed as mistakes or failures but as interesting problems to be worked through together. The inquiry continues until difficulties are overcome and the participants commit to the strategy or until participants reject the innovation in favour of another possible solution. Although we did not see them as mistakes or failures, I do believe that all three of us learned the most from the problems that we solved together.

Prepare to support. I had anticipated that grade ten and eleven students would resist trying a new approach to conducting inquiry. However I had naively predicted that most students would find the steps and process to be uncomplicated. I was surprised at the diverse learning needs of these two classes. It was inspiring to see that both teacher participants encouraged students to work at their own pace, providing scaffolds such as teacher generated focus-questions and sources, until students were ready to proceed

independently. I am pleased by the support I offered the two inexperienced teachers because I am sure that without a collaborative team to support them, they may not have had the confidence to try the inquiry platform strategy or to sustain their efforts through a series of three projects. I supported Alison and Eric by being available at any time to listen or provide ideas.

I am grateful for the research and professional literature that I read before beginning the study because to guide and inspire the teachers through challenges, I found that I needed a depth of expertise to complement my own m practical experience. I have finally internalized the belief in the value of learning communities because of this experience. I believe that I might have been tempted to discard the research platform chart after attempting it once with the classes but because we had committed to work together as colleagues, I and they persisted long enough to see the value of the approach. Implementing something new is always a challenge and when the students were not really excited about it at first and the lessons did not go as planned, it may have been easier for a new teacher to abandon the strategy completely. Hearing the struggles of others and having the support of a team for brainstorming solutions, gave the teachers the strength to persevere. I am also happy that I was able to create an atmosphere of support at our meetings that allowed for both teachers to be comfortable with altering their lesson plans as needed for their situation. The focus remained, as it should, not only on the teacher learning, but on the best interests of the student learners.

Finally, it is important to mention that providing support and encouragement means helping participants identify and appreciate their successes. In our study, after participants shared an incident that had occurred in their classroom, I would often point

out to them the positive aspect of what had happened. For example, when Eric was frustrated because during the third time using the research platform, some students were still making basic responses in the note-making section like:"I wonder..," we discussed the possibility that the student was unable to make connections with any other part of the course due to frequent absences or lack of attention to the class work in general. However, I also pointed out how exciting it was that these students were considering areas they might choose to explore more in relation to the topic. This type of encouragement inspired the teachers to persevere and find solutions to their difficulties. It would not have been possible without my classroom experience and the background literature that I had become familiar with.

Epilogue: The Impact of the Study on My Own Teaching

In this section I share my own application of the student inquiry platform strategy since the time of the study. Since this study, Eric and Alison have each taught on temporary contracts at two other schools each. However, we still maintain contact and they tell me that they are also still using the strategy with their classes. These examples demonstrate the commitment and sustained change to practice that emerged as the fourth step of Mill's (2003) inquiry process, where researchers are urged to "develop an action plan and commitments that will be sustained in practice" (p. 5).

My role as teacher leader and observer rather than a teaching participant occurred because I was on a maternity leave from my usual teaching position. Since that time, I have returned to the classroom to teach several classes of English Language Arts for grade ten students, and a class of beginner German. I have used the research platform strategy with three classes – two English classes and one German class. With the English

classes, I used the strategy to assist students with research on a topic related to the novel we studied in class. My work with a science fiction novel, *The Chrysalids*, confirmed Alison's discovery that a research assignment helps readers make connections between the novel and the real world. I provided three choices for topics: *Nuclear Energy*, *Empowerment of Women*, and, *Segregation of African-American People*. These topics relate to underlying themes of the novel regarding a nuclear disaster, a male dominated society, and lack of acceptance for those with differences. I have also encouraged students to create their own research topic related to the novel. I assigned this project early in the semester, within the first six weeks, so I gave students sample focus questions that they could use or modify to suit their interests.

My instruction follows a pattern similar to those used by Eric and Alison, a gradual release of responsibility to the students. Before we began this individual research assignment, I modeled how to use the platform chart and we practiced using the chart in class, with a partner. I demonstrated the process of organizing data in the chart by displaying three focus questions on the screen in my classroom, using a projector. For the demonstration, I used an accessible topic so that student understanding of the process would not be hindered by difficult. Most students could relate to *The History of Snowmen and Snow Women* and were interested in the focus questions: *When and where was the first snow person built? What is the symbolic meaning of snow people?* and *Where and when were the largest snow people built?* I showed the students where the questions are located on the chart, to guide their information gathering from each source. Next we read together the three relevant articles that I had selected. I modeled note taking by minimizing the article frequently and adding notes to the chart when we discovered

information that was relevant to the focus questions. I demonstrated where on the chart to record sources and all students recorded them on their own charts. I also talk about what I am thinking and doing as I read and record information, so students can witness the process and I encourage students to provide input also. Modeling the use of a variety of multimodal, online sources, I included a youtube video of a snowperson building contest and a photo of the world's largest recorded snowperson. For the video, we recorded the students' comments onto the platform chart as note taking or note making, depending on the type of response. We observed the picture and then recorded the data as well as the students' responses onto the chart as well. The students remained engaged as they recorded class responses and their own onto their own chart. In this manner, more consideration for all learning styles, such as visual and kinesthetic, are addressed.

In the next lesson, the teacher-librarian met us in the computer lab and she demonstrated how to narrow internet searches by typing in key words and ordering words different ways, in order to get the most useful information on a topic. After that, the students who have already shown me their focus questions for their topic related to *The Chrysalids* novel begin their searching through internet sources and recording information on the chart. I provided feedback as I observed their process in the classroom but I also collected the platform charts to check that the notes were paraphrased and not plagiarized. I checked that students remembered to record their sources and make thoughtful connections in the note making sections. If everything is alright, the students proceed to complete a finished product to share their learning. If not, they work on correcting their research platform chart before going on to the final product. The students

display their learning in a PowerPoint to present to the class, complete with a reference list at the end.

I have found the research platform to be useful with my introductory German 11 class. Along with learning the basic language, students are also encouraged to explore the history, tourism, holidays, arts, and customs of a German-speaking country. I have been assigning research platform strategy assignments four times per semester, as students choose from these topics, researched them, and present to the class in the form of a power point slide show, speech, poster, role play or written report. The teaching process is a gradual release of responsibility, as it is in English classes, with the student role increasing for each assignment, as readiness allows. By the end of the semester, students have been comfortable using the platform because they have used it for four different research topics. One of the most enjoyable experiences of that class is watching all the different displays of learning because students are encouraged to sign up for a variety of topics so peers can learn from each others' presentations. Many times students work in partners or groups to do the research for this class. This was just a shortened summary of my work with the research platform. I intend to continue to refine and improve strategies for teaching research skills to students.

Summary of findings. As a teacher leader for this professional inquiry, I encouraged two young teachers to join the Teacher Learning Team to work together on a mutual goal. I supported them in their process of integrating the platform strategy into their curriculum content and I encouraged them to modify their lessons as needed. In this way, I guided our team through the inquiry process. Perhaps most importantly, I listened, advised and documented the experiences of this journey to improve the effectiveness of

teaching students how to gather and process information on topics that interest them and relate to the curriculum.

In this section I have tried to articulate some of the most prominent lessons for teacher leadership that grew out of this study. Much of the learning might have been ideas I have expressed in the past but my beliefs and commitments deepened as a result of this powerful experience. In future, when I have the opportunity to lead professional inquiry teams, I am committed to participating in the inquiry with a curious attitude that allows for participant ownership of the process and of the outcomes. Based on this experience, I will prepare myself in advance by exploring the professional and research literature on the topic. I will be prepared to offer encouragement and brainstorm potential solutions to unanticipated problems throughout the project, as well as to provide a safe and supportive environment for sharing problems as well as successes.

Reflections on Findings

I am pleased to share the results of using the student inquiry platform with other teachers and my experience of encouraging them to participate in their own inquiries: I believe that the strategy is worthwhile, helpful, and useful. The teachers and students in the study not only acquired new skills for organizing and synthesizing data but they also gained some lifelong learning lessons about the importance of thinking about information and finding their own voice. These skills can be used across the curriculum and the intention of my professional inquiry is that it will result in an action plan where the inquiry platform strategy would be shared with teachers of many disciplines. In a collaborative, learning community rich with professional conversations, the systematic inquiry of a few teachers could be shared and serve as a catalyst to changes in

instructional practice, so that most teachers in a school would develop similar research expectations for students. Given the time that must be invested in learning the strategy, it may be that whole-school use of the strategy from year to year will bring the most powerful results.

As teachers embrace the 21st century education concept and focus less on content and more on skills, inquiry, and discovery, the student inquiry platform strategy will hold greater value. The platform strategy will also aid teachers toward 21st century thinking. Our collaborative team experienced just what Mitchell and Sackney (2009) predicted: the teachers "became enchanted with professional learning when they saw the pay-offs in the renewed excitement and improved learning in their students" (p.54).

V. CONCLUSION

In this chapter I provide an overview of the information presented in each preceding chapter, including a summary of my findings. I add an epilogue to the study, to describe how the lessons of this study have been applied in my own teaching in the semesters since Alison, Eric, and I worked together. I look again at the data as a whole, to draw out themes that run through our experiences but may not have been captured in specific answers to my pre-generated research questions. I consider alternative interpretations of the findings and examine some of the assumptions that I held before and during the study. Finally, I identify my plans for sharing this learning as well as suggested areas for further research.

Overview of the Study and Preceding Chapters

This action-based professional inquiry involved three secondary school teachers, including myself, as a teacher leader. We worked together as a team to implement a research platform strategy we had read about in a catalyst article. Considering that we all had experienced difficulties with teaching research skills to students in the past, we were interested in working with the research platform collaboratively. We hoped to improve student inquiry skills by improving the quality of their note taking and helping them make meaningful connections to new information. This study contributed to professional learning about the platform strategy but also about the processes of action-based and collaborative professional inquiry for teachers and teacher leadership for this type of inquiry. The information acquired from the teacher's journal notes, meeting transcripts, anonymous student work, and my classroom observations have provided new awareness of how the research platform strategy can be used in a variety of different lesson formats

to improve students' inquiry skills. The results of this study also provide insight into the skills and personal commitment that is necessary in leading teachers new to the profession through the process of collaborative inquiry.

In the first chapter I discussed the purpose of the study, introduced the research questions, and shared the past experiences with teaching research skills that inspired my desire to pursue this topic. In this chapter I also introduced the catalyst article and established the need for educators to improve research or inquiry skill instruction because of the vast amounts of information now available online.

In the second chapter I explored the related literature in order to further understand the topic and prepare me to lead the inquiry. I read articles to highlight the pedagogical challenges brought about by the volume of information in today's technology-driven world. I explored current thinking on comprehending nonfiction and assisting students in learning note taking strategies. Readings gave me a better understanding of the reasons for plagiarism by secondary students and methods to improve the quality of voice in student writing. The literature review also included specific information on assessment, teacher leadership, and learning communities. Lastly, I reviewed current information on collaborative inquiry teams and twenty-first century learning.

In chapter three I presented a rationale for the method of inquiry for this study as well an outline of the inquiry procedures and sources of data. The rationale explained why I chose collaborative professional inquiry, informed by action research, as my research method. Mills (2003) emphasized the value of this type of inquiry to bring about changes in teaching practice. Further, Brown and Cherkowski (2011) advocated inquiry

for teachers as a parallel or symmetrical social process to inquiry for students. They proposed that teachers who are familiar with inquiry for themselves will be more likely to support inquiry by students. Both purposes aligned with my purposes as a teacher leader, and so professional inquiry informed by action research was fitting. In this chapter, I also described Mill's four step research process, which provided practical procedures for the inquiry, and I outlined the steps that were actually taken by our Teacher Learning Team.

The focus of chapter four is my analysis of the experiences of teaching the research platform strategy and the progress the students and teachers made as they worked through the three projects or assignments. The Teacher Learning Team began with a common need to improve our ability to help students conduct research, and together we created ideas for lessons and strategies to scaffold students toward thorough understanding and more meaningful and independent inquiry experiences. Once we had read the catalyst article, brainstormed some typical lessons, and discussed pacing and intricate details of how to introduce the inquiry platform strategy, the teachers worked with their classes and brought their observations back to our Teacher Learning Team meetings. I led the team through three cycles of action, observation, and decision-making as they each led their students through three student inquiry platform projects. The text of these meetings, as recorded and transcribed, along with my researcher's journal and observation notes provided data to answer my research questions about the effectiveness of the strategy and of the collaborative inquiry process, as well as my learning about leading an inquiry group as a teacher leader. In this chapter I also included my teaching and experience with the research platform after the study had concluded.

Summary of Research Findings

When I designed this study, I was interested in whether the student inquiry platform would be an effective way to teach students how to do research projects. I wondered how effective a collaborative inquiry process would be for helping teachers implement the platform strategy and what aspects of leadership I would find most helpful for guiding the inquiry. Through analyzing the data, I have come to interpretations that I believe will portray our experiences accurately and continue to inform our teaching and leadership practice in the future.

For our Teacher Learning Team, persistent use of the student inquiry platform strategy over one semester in grade ten and eleven courses led to proficiency in information gathering for most students and mastery for some. Formative assessment, including descriptive feedback based on clear expectations or criteria was essential for the development of student skills. As proficiency increased, students began to display curiosity and even a spirit of discovery that enriched their learning and that of their classmates. A discussion from our last Teacher Learning Team meeting is worth repeating for emphasis: There was a definite transition from the first time to the third time as students became less concerned with "going through the motions in order to get a product finished" and more interested in the process of searching for worthwhile sources and interesting data (Alison, TLT, Jan. 13).

The collaborative inquiry process and dedicated teacher leadership appeared to be an essential support for the amount of experimentation that was required for teachers to implement this strategy. Collaborative inquiry was both meaningful and manageable as teachers worked through their frustrations and made sense of their successes together.

The collaboration was enhanced by active participation in the inquiry by a teacher leader who was flexible enough to allow for participant ownership and who was also well-prepared to provide both academic and emotional support. The Teacher Learning Team established for this study created "an atmosphere of trust, [for] both young and adult learners [to] engage willingly in inquiries that address their own compelling questions and generate creative responses to real problems" (Brown & Cherkowski, 2009, p. 64).

There are many more lessons that may be drawn from this study. However, these are the ones that have become most prominent for me, after having more than a year to reflect on our experiences. I expect that further spirals of inquiry with this innovation and others will uncover other lessons and give them new emphasis.

The Future of the Student Inquiry Platform Strategy

The preceding section establishes that the professional inquiry that I conducted with Alison and Eric led to a sustained change in my own practice as well as to further experimentation to refine the strategy. A second aspect of Mill's (2003) fourth step, commitment, confirmed in Brown and Cherkowski's (2011) approach to professional inquiry, is dissemination of the learning beyond inquiry participants. In this section, I describe how I have embarked on this final stage. I will discuss some of the opportunities I have already had to share the student inquiry platform strategy with other professionals and then my plans to share it in the near future.

I made an informal presentation to the twelve members of our Humanities department at a professional conversation time last spring and distributed copies of the platform chart. A few of those teachers have recently told me they are using it with an

inquiry perspective and we had a chance to discuss their findings at a Professional Development day workshop, where each member in the workshop was to bring a favorite assignment to share. A small group of three of us shared the strategy and the ways we use it with teachers who were there from other schools in our district.

I spent a half day in the fall working closely with another English teacher and the teacher librarian from my school to generate grade ten research topics that are curriculum related. This list of topics is now available on the academic resource database we have available to us in the library. Our school staff would like to continue to encourage students to utilize the online databases more often and we plan to continue to work together to encourage that. Having curriculum-related topics available will likely encourage teachers to assign more research projects and become interested in learning how to support students' developing skills.

At this time I am on our school district's Secondary Assessment Leadership Team (SALT) and we are reading current literature on assessment strategies. There are eight of us on the team and we have met four times this year. I have shared my experiences with the platform strategy with this group, as well as our school-based Literacy Team, which meets every eight weeks. This past month a science teacher and a pre-employment teacher from the Literacy Team were going to try the strategy and report back at the next meeting about how it went.

In the future I plan to continue to conduct workshops on the research platform strategy at our professional development days in the district and I would also like to share the platform materials that teachers create electronically, on our school database and beyond. My vision in the future is for all the eighty teachers in our building to be

familiar with the strategy and to try using it at least once. The results of this study have shown me that such widespread and repeated use for students would contribute, in a powerful way, to their proficiency and to their ability to personalize their own learning. In the meantime, I am encouraged by my students who are printing copies of the chart to use in their other classes.

Themes Beyond the Research Questions

Although my research questions helped to focus my data collection and analysis, there are some themes that span one or more questions or go beyond them. These themes are part of my learning associated with this study. They could also become the focus of future inquiries or professional conversations and so they are worthy of mention here. Three themes that I have identified for discussion are the value of meaning and choice in inquiry, the tension between judging students and teaching them, and the fear of failure that inhibits learning. All three of these themes will provide a focus for reflection as we continue our teaching and leadership practice.

The Value of Meaning and Choice in Inquiry

A theme that runs through my research question about the effectiveness of the platform strategy and my question about teacher leadership learning is the value of meaning and choice in inquiry, for both students and adults. Fullan (2007) provided convincing evidence that school reforms are more effective and sustainable when the innovation has meaning for the people who must make it happen in schools and classrooms. Although the changes to practice that resulted from this study for my participants and myself were not on the large scale of school reform, we believe that the

platform strategy is likely to be sustained in our practice with manageable effort and minimal cost. It appears that our inquiry process, with my leadership emphasis on encouraging the teachers to apply the strategy as they saw fit, allowed the teachers to feel ownership and create meaning.

The value of meaning and choice for student engagement was confirmed in Alison's observation that students were more engaged in a novel when they found their own sources to answer focus questions. Our struggle with the note making aspect of the platform strategy and our concern with developing student voice in writing were efforts to help students create meaning in their learning. Although there is more to be done in these areas, our students' responses have encouraged us to continue to refine and extend our practice until choice and meaning making are commonplace and voice brings power to student work.

Our work with the platform strategy did not fully realize the 21st century goal of teachers supporting students to choose their own topics for investigation. However, we feel that we made significant progress toward that goal and we have a starting point, at least, for fulfilling policy recommendations that previously appeared unrealistic and unclear. Teachers who are overwhelmed with increasing class sizes and increasing student diversity may believe the notion of personalized learning is simply not practical but for us, there is a path toward increasing student choice. We understand that personalized learning is more about student choice within a structured process such as the inquiry platform than it is about teachers designing a unique program for each student.

The Tension Between Judging and Teaching Students

This study and the learning achieved by the Teacher Learning Team uncovered a tension between judging students and teaching them, similar to the tension between schools as sorting systems or learning systems, as described by Kaser and Halbert (2009). This tension was evident as our concern with reducing plagiarism gradually shifted to a concern for teaching students the skills they need to write their own thoughts. Although at times we still slipped back into judging students who did not complete research assignments as "lazy", we learned to do much more to support students through the inquiry process and ensure successful completion. With our increased use of formative feedback in addition to assigning a final grade for a completed project, we were emphasizing learning success for all students, – rather than simply sorting students into successful and unsuccessful categories by way of grades.

The Fear of Failure that Inhibits Learning

Fear of failure is evident when people are afraid to make mistakes. This fear was evident for the teacher participants when they were reluctant to share their students' initial response to the inquiry platform strategy. When we began to talk about it, I used the opportunity to build an atmosphere of trust and acceptance that I believe was crucial to our further learning. I assured the teachers that the student response was not surprising and was not due to any lack in their ability to teach the strategy. It was simply a problem to solve together. My assurance that it was possible for the inquiry to be successful even if we did not find the platform strategy effective was another example of the way that fear of failure had to be overcome before honest sharing and real learning could occur.

Before we began to use the platform strategy, some students demonstrated the inhibiting power of fear of failure when they did not hand in a research assignment. During this study, students who asked repeated questions about what to put in the note making section appeared to do so because they were afraid to make mistakes – they were always searching for the "right" answer. It occurred to me as I analyzed our data that voice in student writing may be inhibited by the way that students are taught to look for the "right" answer rather than express their own informed opinion.

Along with the other themes I have identified here, the idea that fear inhibits learning is not an established fact but a question that has been raised. I expect to consider these issues again, as I evaluate the overall effects of other teaching actions throughout my career. A second look at the data, beyond how it answers the straightforward research questions that focused my study, has enabled me to begin to grapple with these bigger ideas.

An Alternative Interpretation

In qualitative research, data is viewed through the researcher's subjective lens, which allows for rich interpretations informed by a researcher's experience and prior knowledge. Validity in qualitative designs is enhanced by considering alternative explanations and by looking for counter-evidence. Using an action-research informed method, the goal of the Teacher Learning Team was to implement a strategy that we viewed as promising. This goal was success-oriented: we expected to experiment with and refine this promising strategy until we had implemented it in a productive and sustainable way. However, it is possible that we expected success and found what we

were looking for by ignoring data that disproved our expectations or by over-emphasizing data that seemed to indicate success.

I have given some thought to the alternative interpretation that the strategy was not successful in certain ways or for certain students. Students who expressed further interest in a topic may have been merely providing the answers they knew we were looking for. Although we saw signs of increased student engagement and confidence, these are also subjective judgments. We found no irrefutable evidence that using the student inquiry platform strategy increased student engagement or achievement.

However, in professional inquiry, credibility is given to the teachers' professional judgment and classroom assessment practices (Brown & Cherkowski, 2011). Instructional decisions made on the basis of experiential knowledge, classroom observations, and reflective practice, particularly when those data are shared with informed collaborators in professional conversations, form the basis of effective professional practice. Educational leaders, which includes teacher leaders and innovators, are encouraged to maintain an inquiry mindset (Kaser & Halbert, 2009) even beyond their findings, as they continue to question what they believe they have learned. But they are also empowered to trust their own carefully constructed professional judgments and to teach and lead every day using that knowledge.

I believe that my ongoing use and refinement of the strategy, as well as the fact that Eric and Alison have continued to use it as well, is confirmation that our experience of success in this study was genuine. As teachers, we found that the strategy was helpful. Although we did not formally measure the students' learning, I believe that our inquiry focused sincerely on interpretations based on student response. It is possible that

movement toward 21st century learning, in terms of student choice of topics and engagement in learning more about them, is a worthwhile goal in itself. Evidence of increased achievement on a large scale may be difficult to capture and beyond the scope of professional inquiry conducted by teachers. However, remembering that the purpose of this study was implementation, we can view the inquiry as successful. Participating teachers, including myself after our collaborative inquiry, have applied the strategy in a variety of setting and have remained convinced that once mastered, it empowers their students with lifelong learning skills.

In my enthusiasm for the potential of the student inquiry platform strategy as a school-wide initiative, I remind myself to encourage teachers not to receive this innovation as a finished package. I feel confident sharing the strategy because its potential has been confirmed in the literature on nonfiction literacy and in this study. But I do want teachers to trust their own judgments and apply it with a curious approach, taking note of the impact for their own students. To apply my teacher leadership learning to a broader audience, I have learned that implementation will be more effective and sustained if the inquirers adapt and modify the strategy to make it their own. To demonstrate respect for each learner, it must also be acceptable to choose to put the strategy aside in favour of other priorities or method.

Examining Researcher Assumptions

Another aspect of the self-critical reflection appropriate at the end of the study is to examine my own assumptions and look for places where potential learning offered by the study is not yet realized. I have thought about areas where my assumptions have changed or are in the process of changing. The most noteworthy is an emphasis on

teaching content, which often limits the time secondary teachers believe they are able to invest in teaching learning strategies. As an observer and guide on the Teacher Learning Team, I saw teachers make a shift from task and product orientation to more emphasis on teaching a learning process. I interpreted that shift to be valuable learning. In realizing the vision of the 21st century learning, teachers are preparing students to learn on their own.

However, as I revised my writing about the study, I found many instances where I wrote about the platform chart as though it were an end product, and where I referred to the chart rather than the whole strategy. Part of this is due the emphasis of the Teacher Learning Team on the information gathering stage of the strategy, in which the chart is created. However, my own language reveals the typical emphasis on content that characterizes the culture of secondary teaching and may inhibit movement toward student-centered learning. Just as I have realized my own growth in formative assessment since the beginning of the study, I expect I will also continue to notice a shift in my thinking about content and product versus strategy and process. At present, I believe this study provides convincing evidence that teachers do not have to sacrifice process learning in order to deliver content. By applying the platform strategy in a variety of creative assignments relevant to their course content, Eric and Alison were able to have students acquire the prescribed course content at the same time as they practiced a learning strategy. The advantages of the platform strategy are summarized in charts in Appendix G and H.

Suggestions for Further Study

This study answered a call for further research from Brown, Klein, and Lapadat (2008) that was made in the journal article that described the design of the student

research [or inquiry] platform strategy. However, I believe this study has only begun to demonstrate the potential of the strategy and develop a variety of applications at different grade levels and in different subject areas. I encourage other teachers and teacher leaders to build on the potential that we have established and extend knowledge of the strategy through reflective implementation in their own schools. It would be useful to have studies that examine the expressive stage – how students learn to synthesize information to produce high quality exhibitions of their learning. I am also interested in how teachers assess learning at all stages and how they make decisions about differentiation and pacing. Case studies of individual students and their response to platform assignments may be helpful to other teachers as well.

If teams of teachers in the same school were to implement the strategy, it would be useful to track the success of the initiative over time, as students move from grade to grade. Beyond professional inquiry studies that focus on how students learn and how the innovation is most effectively implemented, there is a need for long term studies to evaluate the impact of the strategy on student learning. For those of us who have learned the basics of the strategy during this study, there are ample opportunities to refine and extend our knowledge in further spirals of inquiry (Kaser, Halbert, & Koehn, 2011).

Summary

Today's secondary teachers are challenged to shift their practice to more personalization of learning through project-based student inquiry (Hannon & Mackay, 2011, p.4). Faced with an abundance of technology-based information and these pressures from 21st century learning advocates to become more relevant, today's teachers can choose to embrace the challenge or avoid it. Our Teacher Learning Team embraced

the challenge through collaborative inquiry, with energizing and confidence-building results for ourselves as well as for our students. We concluded this cycle of inquiry with commitments to formative feedback and personalized learning, supported by our increasing understanding and pedagogical skill. We expect that the student inquiry platform, as developed by Brown, Klein, and Lapadat (2009), will provide ample scope for further rounds of inquiry in our classrooms, especially as we move more consciously toward teaching students to choose from an array of multimodal projects to express their learning. Although we do not expect our findings to dictate how others teach, we do hope this description of our journey will encourage others to embrace 21st century innovation with their own cycles of experimentation and reflection. In this manner the learning team will have succeeded in accomplishing the ideal described by Mitchell and Sackney (2009) which would be for our "personal commitment to ongoing learning and development [to send] ripple effects throughout the school" (p. 54).

REFERENCES

Abbott, J. (1997, October). 21st Century learning: beyond schools. *Education Digest* 63(2), 1-6.

Adler-Kassner, L, Anson, C. & Howard, R.M. (2008) Framing Plagiarism. In *Originality, Imitation, and Plagiarism: Teaching Writing in the Digital Age.*(pp. 231-246) Ann Arbor: U of Michigan , p.231-246.

Alberta Learning. (2004). *Focus on inquiry* [website]. Retrieved: http://www.learning.gov.ab.ca/k_12/curriculum/bySubject/focusoninquiry.df

Anderson L., & Krathwohl, D. (2001). *A taxonomy for learning, teaching, and assessing: A revision of Bloom's taxonomy of educational objectives.* New York: Longman.

Bassett, P. (2009, Fall). Demonstrations of learning for 21st-century schools. *Independent School.* 69(1), 1-5.

British Columbia Ministry of Education. (2001). *Integrated Resource Plan for English Language Arts, grades 8-12.* [website]. Retrieved: http://www.bced.gov.bc.ca/irp/subject.php?lang=en&subject=English%20Language%20Arts.

Brown, W., & Cherkowski, S. (2011). Owning our learning: Scaffolding professional inquiry for education. *LEARNing Landscapes,* 4 (2), 61-78.

Brown, W., Klein, H., & Lapadat, J., (2009). Scaffolding student research in a digital age: An invitation to inquiry. *Networks Online Journal of Teacher Research.* 11 (1), 1-11.

Cresswell, J. W. (2005). *Educational research: planning, conducting, and evaluating quantitative and qualitative research.* New Jersey: Pearson Education.

Danielson, C. (2007, September). The many faces of leadership. *Educational Leadership.* 65(1),14-19.

David, J. L. (2009, March) Teaching media literacy. *Educational Leadership.* 66(6) 84-86.

Donaldson, G. A. (2007). What do teachers bring to leadership? *Educational Leadership.* 65(1),184-188.

Eaker, R., Dufour, R.& Dufour, R. (2002). *Getting started: Reculturing schools to*

Become professional learning communities. Bloomington, Indiana: National Educational Service.

Earl, L., Volante,L. & Katz,S. (Spring 2011) Unleashing the Promise of Assessment for Learning. *Education Canada*, p. 5-11.

Earl, L. (2006). Rethinking Classroom Assessment with Purpose in Mind,*Western and Northern Canadian Protocal in Education (WNCP)-Assessment Team.* Retrieved from: www.european-agency.org.

Ekdahl, M., M. Farquharson, J. Robinson, L.Turner. (2010). *The Points of Inquiry: A Framework for In-formation Literacy and the 21st Century Learner.* Vancouver, BC: British Columbia Teacher-Librarians' Association.

Emerson, L., (2008) Plagiarism, a turnitin trial, and an experience of cultural disorientation., In C. Eisner.,& M. Vicinus (Eds), *Originality, imitation, and plagiarismTeaching writing in the digital age* (pp. 183-193). Ann Arbor: University of Michigan Press.

Fullan, M. (2007). *The new meaning of educational change.* New York: Teachers College Press.

Gear, A. (2008). *Nonfiction reading power: Teaching kids how to think while they read all kinds of information.* Markham, ONT: Pembroke Publishers.

Gear, A. (2006). *Reading power:Teaching kids to think while they read.* Markham, ONT: Pembroke Publishers.

Greenwood, D & Levin, M. (2006). Introduction to action research: *Social research for social change* (2nd ed.) Thousand Oaks, CA: Sage.

Halbert, J., Kaser, L., & Kohn, D. (2011). *Spirals of inquiry: Building professional inquiry to foster student learning.* Paper presented at the International Congress for School Effectiveness and School Improvement (ICSEI), Limassol, Cyprus, January 6, 2011.

Hannon, V. (2009, September) Only connect!: A new paradigm for learning innovation in the21st century. *Centre for Strategic Education Occasional Paper.* 112(9) 1-11.

Hannon, V., & McKay, T. (2011). *Personalized learning in the 21st century: from vision to action.* PowerPoint, retrieved from: http://www.bcssa.org/fallconference.html.

Harvey, S. & Goudvis, A. (2007) *Strategies that work.* Markham, ONT: Pembroke.

Hattie, J. (2003) *Teachers make a difference, what is the research evidence?* University of Auckland: Australian Council for Educational Research Publications.

Kaser L. & Halbert, J. (2009) Network of Inquiryand innovation (NOII). Retrieved from: *http://www.noii.ca/networkleaders.html*

Kemmis, S., & McTaggart, R. (2000). Participatory action research. In N. Denzin, & Y. Lincoln (Eds.) *Handbook of Qualitative Research.* Thousand Oaks, CA: Sage. pp. 567-601.

Klein, H. (1990, October). *Controlled research.* Saskatchewan School Trustees Association Research Centre Report#90-17, Regina, SK, Canada.

Lambert, L. (2002, May). A Framework for shared leadership, *Educational Leadership.* 65 (1) 37-40.

Lattimer, H. (2007, September). To help and not hinder, *Educational Leadership.* 65 (1) 70-73.

Lee, H. (1960). *To kill a mockingbird.* New York: Warner Books.

Lee, T, (Nov. 2008) *Teaching research skills to students for the twenty-first century*[website]Retreived:http://ezinearticles.com/?Teaching-research-skills-for-the-twenty-first-Century&id=1678780.

Lindblom, D. (2008). *The quest for lively nonfiction writing: How do we help students get there?* Unpublished master's project. University of Northern British Columbia, Prince George, British Columbia, Canada.

Lipton, L., & Wellman, B., (2007). How to talk so teachers listen, *Educational Leadership.* 65 (1) 30-34.

Magner, T. (2011, September). The time is now for 21st-century teaching. *Education Week,* 31(5) 1-3.

Mauch, J., and Park, N., (2003) *Guide to the successful thesis and dissertation; a handbook for students and faculty, (5th ed).* New York: Marcell Dekker.

McPhail, K. (2008). *Teaching research skills in a google world.*[website] Retrieved: http/www.ParentMap.com/content/view/1108.

Mills, G. E (2003) *Action research: A guide for the teacher researcher (2nd ed..)* New Jersey: Pearson.

Mitchell, C., & Sackney, L. (2000). *Profound improvement: Building capacity for a learning community.* Sense Publishers: Boston, MA

Mitchell, C., & Sackney, L. (2009) *Sustainable learning communities: from managed systems to living systems.* Paper presented at the annual conference of International Congress for School Improvement: Vancouver, British Columbia.

Mitchell, C., & Sackney, L. (2009). *Sustainable improvement: building learning communities that endure.* Sense Publishers: Boston, MA

Moore H. R., & Davies, L. (2009) Plagiarism in the internet age, *Educational Leadership*, 66 (6), 64-67.

Reason, C., & Reason, L. (2007, September). Asking the right questions. *Educational Leadership*, 65 (1)36-40.

Richardson, V. (2003). Constructivist pedagogy. *Teachers College Record,* 105(9), 1623–1640

Routman, R. (2003). *Reading essentials*. Portsmouth, NH: Heinemann.

Roy P. Clark, (2006) *Writing tools*. New York: Little, Brown and Company.

Schroeder, E. E., & Zarinnia, E. A. (2001). Problem-based learning: Developing information literacy through real problems. *Knowledge Quest* (1), 34–35.

Shirley, S. (2004). The art of paraphrase. *Teaching English in the Two Year College* 22(2), 186-189.

Stead,T. (2006) *Teaching reading comprehension with nonfiction.* Pembroke publishers: Markham,Ontario

Stringer, E.T. (1993). Socially responsive educational research: Linking theory and practice. In D. Flinders, & G. E. Mills (Eds.) *Theory and concepts in qualitative research: Perspectives from the field.* New York: Teachers College Press. Thousand Oaks, CA. pp. 141-162.

Theroux, P. (2011). *Enhance learning with technology: Differentiated instruction.* [website]. Retrieved: http://members.shaw.ca/priscillatheroux/differentiating.html

Twenty-first century schools. (2011) [website]. Retrieved: *http://www.21stcenturyschool.com/index.htm*

Wiliam, D., & Black, P. (2001). *) Inside the black box; Raising standards through classroom assessment.* King's College London School of Education. Retrieved: URL: http://www.pdkintl.org/kappan/kbla9810.htm pp. 1-16..

Wydham, J. (1983) *The chrysalids*. New York: Penguin Books.

APPENDIX A: School District #57 Research Approval

SCHOOL DISTRICT NO. 57 (PRINCE GEORGE)

2100 Ferry Avenue, Prince George, B.C. V2L 4R5 Phone: (250) 561-6800 • Fax (250) 561-6801
www.sd57.bc.ca

October 8, 2009

Jodie Baker
8890 Chilcotin Road
Prince George, BC
V2N 5V9

Dear Jodie:

This letter is to confirm the discussion at our meeting regarding your request to access to schools in the Prince George School District for the purpose of educational research. As we discussed, the school district recognizes the integral part that research plays in education. We support the research sponsored by our local tertiary institutes as a priority. Your project, using multimodal research platform strategy to help teachers change practise, is intriguing and I am interested in your results.

This letter's purpose is to indicate that you have district approval to proceed with your project. "District approval" allows the researcher to approach principals and subsequently teachers to request their permission to conduct research in their school/classroom. Your next step will be to contact the principal of PGSS to set up a meeting to discuss your project and obtain his permission to undertake the project in his school. A copy of this letter has been forwarded to Brian Toll, Principal, PGSS.

If you have any questions, please do not hesitate to call me. Good luck with your project. I look forward to receiving a copy of the final report.

Sincerely,

Bonnie Chappell
Director, School Services

BC/hg

CC: Brian Toll, PGSS

APPENDIX B: UNBC Research Ethics Approval Letter

UNIVERSITY OF NORTHERN BRITISH COLUMBIA

RESEARCH ETHICS BOARD

MEMORANDUM

To: Jodie Kennedy-Baker
CC: Willow Brown

From: Henry Harder, Chair
Research Ethics Board

Date: October 20, 2009

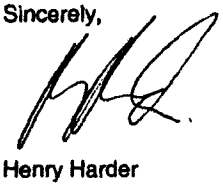
Re: **E2009.0923.141**
Collaborative Inquiry to Develop Student's Research Skills

Thank you for submitting the above-noted research proposal to the Research Ethics Board. Your proposal has been approved.

We are pleased to issue approval for the above named study for a period of 12 months from the date of this letter. Continuation beyond that date will require further review and renewal of REB approval. Any changes or amendments to the protocol or consent form must be approved by the Research Ethics Board.

Good luck with your research.

Sincerely,



Henry Harder

APPENDIX C: Sample Lessons Provided to the Participant Teachers

Scaffolding Research Skills Lesson Ideas

Lesson One

- Explain process of information gathering chart.
- Present one source and demonstrate how to use the chart to paraphrase and record. Remind them that if they don't know what it means then it shouldn't be on the chart.
- Students practice using the chart with a partner and hand in when finished or at the end of class- whichever comes first! (this is "assignment one")

(Assess for ability to pick out the main idea and paraphrase. Depending on their competence with the chart, some will do the same exercise again, while the proficient ones move on to the next stage.)

Lesson Two

- Give feedback on charts- hand back and discuss.
- Explain assignment 2 – complete the chart individually.
- You teach, or guest speaker (librarian) teaches how to find sources on the internet and how to tell if the source is appropriate and valid.

Lesson Three

- Give feedback on assignment one and two- depending on which one students did the previous day.
- Explain assignment 3 and the expectations.
- Practice time: - some students are doing lesson one or two again with a slightly different topic.
- some students are using the internet to find three more sources on the topic for lesson three. Then they are filling out the chart.

Lesson Four

- Return charts to students with feedback and direction to either do an assignment again or begin the next one.
- Review how to find sources.
- Explain final assignment expectations- what will the final product be- a short essay?
- You may want to make a presentation/demonstration on how to take the ideas on the chart and develop a short essay. You could show how you would do this in a 15 minute mini-lesson using a different topic than any of the choices given to students.
- Students select from 3 topics and are expected to find at least 5 sources.
- Practice time: students work on whatever stage they are at with assistance from the teacher. (this may take 2 or 3 classes).

Lessons Five, Six and Seven.

- Students who have completed assignment three present their final products.
- More practice time to complete assignments.
- More lessons may need to be added depending on results!

APPENDIX D: Sample Marking Scheme Provided at the Beginning of the Study

Research Skills Unit Marking Scheme

Mark	Expectations
C+ (67-72%)	Complete assignment one and two (charts) Complete assignment three with a partner
B (73-85%)	-Complete assignment one and two (charts) Complete assignment three individually Complete chart with the five sources for assignment four
A (86-100%)	Complete assignment one and two (charts) Complete assignment three with a partner Complete assignment four individually

Assignment one: fill out the chart with a partner.
Assignment two: fill out the chart individually.
Assignment three: find three sources and present an interview or poster with a partner.
Assignment four: find five sources for a topic of your choice and present the information.

*Assignment one and two may be repeated several times until it is completed correctly.

APPENDIX E: Outline Rubric for Student Work

Student Name:_____ **Outline Rubric**

Category	3 Points	2 Points	1 Points	0 Points
Title (x1)	Title is centered with appropriate capitalizations.	Title is not centered with capitalizations.	Title is not centered and not capitalized.	No title.
Research Question (x3)	The research question (or specific issue to be investigated) is clearly and precisely stated.	The research question (or specific issue to be investigated) is clearly and - precisely stated.	The research question (or specific issue to be investigated) is stated but not in a precise manner.	The research question (or specific issue to be investigated) is not stated.
Thesis Statement (x2)	Working thesis is a specific statement that relates in a logical way to, and is supported by the topics, sub-topics, and the detailed evidence.	Working thesis is a fairly specific statement that mostly relates in a logical way, and is supported by the topics, sub-topics, and detailed evidence.	Working thesis is general and somewhat related to the topics, sub-topics, and detailed evidence.	Working thesis is missing.
Roman Numeral and Indentation (x1)	Main ideas are outlined properly with Roman numerals. Outline is properly indented.	Roman numerals are not outlined properly. Outline is indented to some extent.	Roman numerals are incomplete and not outlined properly. Outline lacks proper indentation.	Roman numerals are missing. Outline is not indented.
Subheading & Supporting Details (x2)	Capital letters and numbers are used correctly to identify subheading and supporting details. Focus questions are clearly identified as subheadings.	There are some letters and numbers missing in identifying subheadings and supporting details. Focus questions have become subheadings.	There are many missing letters and numbers in identifying subheadings and supporting details. Little evidence that the focus questions have become subheadings.	Letters and numbers are not used. There is no evidence of focus questions having become subheadings.
References (x2)	Includes at least five scholarly sources related to the topic and there is diversity within the sources ex. article, picture, book, you tube, map, poster.	Includes at least four scholarly sources related to the topic and there is diversity within the sources	Includes a minimum of 3 scholarly sources.	References are missing.

_____/ 33 points possible for outline

APPENDIX F: The Research Platform Chart

Topic:_____ **Name:** _____

3 Key Questions		**Source 1:**	**Source 2:**	**Source 3:**
1.	**Note Taking:** Info I found			
	Note Making: What I think or wonder about the information in note-taking			

2	**Note Taking:** Info I found			
	Note Making: What I think			
3.	**Note Taking:** Info I found			
	Note Making: What I think			

APPENDIX G: Teaching Research Skills and the Success of the Platform Strategy

My findings with using the research platform strategy, compared with any other method of teaching students research skills is summarized in the following chart:

- Fewer students frustrated with being "stuck" and not knowing how to get started.
- No students taking the assignment home and re-appearing with a product, but no evidence of the process.
- No students who have "lost" their sources or references page.
- More students reading more thoroughly, with deeper focus in order to answer key questions.
- No more cutting and pasting from the first sources that appear in a search engine.
- More use of academic databases provided by the library.
- Less concern with what consequences should be for plagiarism.
- More student connection and engagement with their topic.
- Fewer students with vocabulary in their chart that they don't even understand themselves.
- Less teacher involvement in writing the essay. When the chart is prepared very well, an essay is achievable for a senior student to do well, whereas pages of notes in the past led to frustration.
- More student engagement and excitement about their topic and the process
- More confidence in conducting academic inquiry effectively and correctly.
- Better results and success for more students. The only students who are not successful are the ones who do not participate in lessons because of absenteeism

APPENDIX H: Improvements to Instruction Using the Platform Strategy.

My professional observations since I started utilizing the Student Research Platform to teach research skills. I have noticed:

- More thoughtful consideration for assessment before creating the assignment
- More effective feedback for students by utilizing rubrics
- Better sequential teaching with careful scaffolding to gradually release responsibility to students.
- Better teacher modeling of research steps, processes, and how to document ideas.
- Better differentiated learning with more choice of topics and choice of how to display learning in final product
- Less focus on the end product and more focus and time spent on correcting the research process with regular and timely feedback, rather than all at the end and based solely on the product.
- Less focus on pointing out plagiarism in the final product because it doesn't happen anymore!
- More enjoyment and celebration of student expertise in their area of interest.
- More confidence in providing students with useful life skills regardless of what career path is chosen; these skills will be useful in the future.
- A decrease in frustration when assessing because the editing and correction has been done during the process so there are fewer final product disasters.
- Increased student autonomy over the process, with time and practice, and a better final product as a result.